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 Asp Ser Val Glu Glu Ala Leu Ser Glu Ala Arg Glu His Leu Lys Asn  
 35 40 45  
 Gly Thr Cys Gly Leu Val Glu Leu Glu Lys Gly Val Leu Pro Gln Leu  
 50 55 60  
 Glu Gln Pro Tyr Val Phe Ile Lys Arg Ser Asp Ala Leu Ser Thr Asn  
 65 70 75 80  
 His Gly His Lys Val Val Glu Leu Val Ala Glu Met Asp Gly Ile Gln  
 85 90 95  
 Tyr Gly Arg Ser Gly Ile Thr Leu Gly Val Leu Val Pro His Val Gly  
 100 105 110  
 Glu Thr Pro Ile Ala Tyr Arg Asn Val Leu Leu Arg Lys Asn Gly Asn  
 115 120 125  
 Lys Gly Ala Gly Gly His Ser Tyr Gly Ile Asp Leu Lys Ser Tyr Asp  
 130 135 140  
 Leu Gly Asp Glu Leu Gly Thr Asp Pro Ile Glu Asp Tyr Glu Gln Asn  
 145 150 155 160  
 Trp Asn Thr Lys His Gly Ser Gly Ala Leu Arg Glu Leu Thr Arg Glu  
 165 170 175  
 Leu Asn Gly Gly Ala Val Thr Arg Tyr Val Asp Asn Asn Phe Cys Gly

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180

185

190

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Gly Lys Ser Met Cys Thr Leu Ser Glu Gln Leu Asp Tyr Ile Glu Ser  
210 215 220  
Lys Arg Gly Val Tyr Cys Cys Arg Asp His Glu His Glu Ile Ala Trp  
225 230 235 240  
Phe Thr Glu Arg Ser Asp Lys Ser Tyr Glu His Gln Thr Pro Phe Glu  
245 250 255  
Ile Lys Ser Ala Lys Lys Phe Asp Thr Phe Lys Gly Glu Cys Pro Lys  
260 265 270  
Phe Val Phe Pro Leu Asn Ser Lys Val Lys Val Ile Gln Pro Arg Val  
275 280 285  
Glu Lys Lys Lys Thr Glu Gly Phe Met Gly Arg Ile Arg Ser Val Tyr  
290 295 300  
Pro Val Ala Ser Pro Gln Glu Cys Asn Asn Met His Leu Ser Thr Leu  
305 310 315 320  
Met Lys Cys Asn His Cys Asp Glu Val Ser Trp Gln Thr Cys Asp Phe  
325 330 335  
Leu Lys Ala Thr Cys Glu His Cys Gly Thr Glu Asn Leu Val Ile Glu  
340 345 350  
Gly Pro Thr Thr Cys Gly Tyr Leu Pro Thr Asn Ala Val Val Lys Met  
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Pro Cys Pro Ala Cys Gln Asp Pro Glu Ile Gly Pro Glu His Ser Val  
370 375 380  
Ala Asp Tyr His Asn His Ser Asn Ile Glu Thr Arg Leu Arg Lys Gly  
385 390 395 400  
Gly Arg Thr Arg Cys Phe Gly Gly Cys Val Phe Ala Tyr Val Gly Cys  
405 410 415  
Tyr Asn Lys Arg Ala Tyr Trp Val Pro Arg Ala Ser Ala Asp Ile Gly  
420 425 430  
Ser Gly His Thr Gly Ile Thr Gly Asp Asn Val Glu Thr Leu Asn Glu  
435 440 445  
Asp Leu Leu Glu Ile Leu Ser Arg Glu Arg Val Asn Ile Asn Ile Val  
450 455 460  
Gly Asp Phe His Leu Asn Glu Glu Val Ala Ile Ile Leu Ala Ser Phe  
465 470 475 480  
Ser Ala Ser Thr Ser Ala Phe Ile Asp Thr Ile Lys Ser Leu Asp Tyr  
485 490 495  
Lys Ser Phe Lys Thr Ile Val Glu Ser Cys Gly Asn Tyr Lys Val Thr  
500 505 510  
Lys Gly Lys Pro Val Lys Gly Ala Trp Asn Ile Gly Gln Gln Arg Ser

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 Arg Ser Ile Phe Ala Arg Thr Leu Asp Ala Ala Asn His Ser Ile Pro  
 545 550 555 560  
 Asp Leu Gln Arg Ala Ala Val Thr Ile Leu Asp Gly Ile Ser Glu Gln  
 565 570 575  
 Ser Leu Arg Leu Val Asp Ala Met Val Tyr Thr Ser Asp Leu Leu Thr  
 580 585 590  
 Asn Ser Val Ile Ile Met Ala Tyr Val Thr Gly Gly Leu Val Gln Gln  
 595 600 605  
 Thr Ser Gln Trp Leu Ser Asn Leu Leu Gly Thr Thr Val Glu Lys Leu  
 610 615 620  
 Arg Pro Ile Phe Glu Trp Ile Glu Ala Lys Leu Ser Ala Gly Val Glu  
 625 630 635 640  
 Phe Leu Lys Asp Ala Trp Glu Ile Leu Lys Phe Leu Ile Thr Gly Val  
 645 650 655  
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 660 665 670  
 Asp Cys Val Lys Cys Phe Ile Asp Val Val Asn Lys Ala Leu Glu Met  
 675 680 685  
 Cys Ile Asp Gln Val Thr Ile Ala Gly Ala Lys Leu Arg Ser Leu Asn  
 690 695 700  
 Leu Gly Glu Val Phe Ile Ala Gln Ser Lys Gly Leu Tyr Arg Gln Cys  
 705 710 715 720  
 Ile Arg Gly Lys Glu Gln Leu Gln Leu Leu Met Pro Leu Lys Ala Pro  
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 Lys Glu Val Thr Phe Leu Glu Gly Asp Ser His Asp Thr Val Leu Thr  
 740 745 750  
 Ser Glu Glu Val Val Leu Lys Asn Gly Glu Leu Glu Ala Leu Glu Thr  
 755 760 765  
 Pro Val Asp Ser Phe Thr Asn Gly Ala Ile Val Gly Thr Pro Val Cys  
 770 775 780  
 Val Asn Gly Leu Met Leu Leu Glu Ile Lys Asp Lys Glu Gln Tyr Cys  
 785 790 795 800  
 Ala Leu Ser Pro Gly Leu Leu Ala Thr Asn Asn Val Phe Arg Leu Lys  
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 Gly Gly Ala Pro Ile Lys Gly Val Thr Phe Gly Glu Asp Thr Val Trp  
 820 825 830  
 Glu Val Gln Gly Tyr Lys Asn Val Arg Ile Thr Phe Glu Leu Asp Glu  
 835 840 845  
 Arg Val Asp Lys Val Leu Asn Glu Lys Cys Ser Val Tyr Thr Val Glu



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Glu	Phe	Ala	Cys	Val 875	Val
Ala	Glu	Ala	Val	880	
Val	Lys	Thr	Leu	Gln 885	Pro
Val	Ser	Asp	Leu 890	Leu	Thr
Asn	Met	Gly	895	Ile	
Asp	Leu	Asp	Glu 900	Trp	Ser
Val	Ala	Thr 905	Phe	Tyr	Leu
Phe	Asp	910	Asp	Ala	
Gly	Glu	Glu	915	Asn	Phe
Ser	Ser	Arg	920	Met	Tyr
Cys	Ser	Phe	925	Tyr	Pro
Pro					
Asp	Glu	Glu	Glu	Glu	Asp 930
Asp	935	Ala	Glu	Cys	Glu
Glu	940	Glu	Glu	Ile	Asp
Glu	Thr	Cys	Glu	His	Glu 950
Tyr	Gly	Thr	Glu	Asp 955	Asp
Tyr	Gln	Gly	Leu	960	
Pro	Leu	Glu	Phe	Gly 965	Ala
Ser	Ala	Glu	Thr 970	Val	Arg
Val	Glu	975	Glu	Glu	
Glu	Glu	Glu	Asp 980	Trp	Leu
Asp	Asp	Thr 985	Thr	Glu	Gln
Ser	Glu	990	Ile	Glu	
Pro	Glu	Pro	Glu	Pro	Thr
Pro	1000	Glu	Glu	Pro	Val
Asn	Gln	Phe	Thr	Gly	
1005					
Tyr	Leu	Lys	Leu	Thr	Asp
Asn	Val	Ala	Ile	Lys	Cys
Val	Asp	Ile	Val		
1010					
Lys	Glu	Ala	Gln	Ser	Ala
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Asn	Ala	Ala	Asn	1020	
1025					
Ile	His	Leu	Lys	His	Gly
Gly	Gly	Gly	Val	Ala	Gly
Ala	Leu	Asn	Lys	Ala	1030
1035					
Thr	Asn	Gly	Ala	Met	Gln
Lys	Glu	Ser	Asp	Asp	Tyr
Ile	Lys	Leu	Asn	1040	
Gly	Pro	Leu	Thr	Val	Gly
Gly	Ser	Cys	Leu	Leu	Ser
Gly	His	Asn	Leu	1045	
Ala	Lys	Lys	Cys	Leu	His
Val	Val	Gly	Pro	Asn	Leu
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1090					
Asp	Ile	Gln	Leu	Leu	Lys
Ala	Ala	Tyr	Glu	Asn	Phe
Asn	Asn	Ser	Gln	Asp	1100
1105					
Ile	Leu	Leu	Ala	Pro	Leu
Leu	Ser	Ala	Gly	Ile	Phe
Gly	Ala	Lys	Pro	1110	
1115					
Leu	Gln	Ser	Leu	Gln	Val
Cys	Val	Gln	Thr	Val	Arg
Thr	Gln	Val	Tyr	1120	
Ile	Ala	Val	Asn	Asp	Lys
Ala	Leu	Tyr	Glu	Gln	Val
Val	Met	Asp	Tyr	1125	
Leu	Asp	Leu	Lys	Pro	Arg
Val	Glu	Ala	Pro	Lys	Gln
Glu	Glu	Pro	1130		
Pro	Asn	Thr	Glu	Glu	Lys
Ser	Val	Val	Gln	Lys	
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Pro	Asn	Thr	Glu	Asp	Ser
Lys	Thr	Glu	Glu	Lys	Ser
Val	Val	Gln	Lys		
1140					
Ile	Ala	Val	Asn	Asp	Lys
Ala	Leu	Tyr	Glu	Gln	Val
Val	Met	Asp	Tyr	1145	
Leu	Asp	Leu	Lys	Pro	Arg
Val	Glu	Ala	Pro	Lys	Gln
Glu	Glu	Pro	1150		
Pro	Asn	Thr	Glu	Asp	Ser
Lys	Thr	Glu	Glu	Lys	Ser
Val	Val	Gln	Lys		
1155					
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Lys	Thr	Glu	Glu	Lys	Ser
Val	Val	Gln	Lys		
1160					
Pro	Asn	Thr	Glu	Asp	Ser
Lys	Thr	Glu	Glu	Lys	Ser
Val	Val	Gln	Lys		
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Lys	Thr	Glu	Glu	Lys	Ser
Val	Val	Gln	Lys		
1170					
Pro	Asn	Thr	Glu	Asp	Ser
Lys	Thr	Glu	Glu	Lys	Ser
Val	Val	Gln	Lys		
1175					
Pro	Asn	Thr	Glu	Asp	Ser
Lys	Thr	Glu	Glu	Lys	Ser
Val	Val	Gln	Lys		
1180					

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Thr Thr Leu Glu Glu Thr Lys Phe Leu Thr Asn Lys Leu Leu Leu Phe  
                                  1220                      1225                      1230

Ala Asp Ile Asn Gly Lys Leu Tyr His Asp Ser Gln Asn Met Leu Arg  
                                  1235                      1240                      1245

Gly Glu Asp Met Ser Phe Leu Glu Lys Asp Ala Pro Tyr Met Val Gly  
                                  1250                      1255                      1260

Asp Val Ile Thr Ser Gly Asp Ile Thr Cys Val Val Ile Pro Ser Lys  
                                  1265                      1270                      1275                      1280

Lys Ala Gly Gly Thr Thr Glu Met Leu Ser Arg Ala Leu Lys Lys Val  
                                  1285                      1290                      1295

Pro Val Asp Glu Tyr Ile Thr Thr Tyr Pro Gly Gln Gly Cys Ala Gly  
                                  1300                      1305                      1310

Tyr Thr Leu Glu Glu Ala Lys Thr Ala Leu Lys Lys Cys Lys Ser Ala  
                                  1315                      1320                      1325

Phe Tyr Val Leu Pro Ser Gly Ala Pro Asn Ala Lys Glu Glu Ile Leu  
                                  1330                      1335                      1340

Gly Thr Val Ser Trp Asn Leu Arg Glu Met Leu Ala His Ala Glu Glu  
                                  1345                      1350                      1355                      1360

Thr Arg Lys Leu Met Pro Ile Cys Met Asp Val Arg Ala Ile Met Ala  
                                  1365                      1370                      1375

Thr Ile Gln Arg Lys Tyr Lys Gly Ile Lys Ile Gln Glu Gly Ile Val  
                                  1380                      1385                      1390

Asp Tyr Gly Val Arg Phe Phe Phe Tyr Thr Ser Lys Glu Pro Val Ala  
                                  1395                      1400                      1405

Ser Ile Ile Thr Lys Leu Asn Ser Leu Asn Glu Pro Leu Val Thr Met  
                                  1410                      1415                      1420

Pro Ile Gly Tyr Val Thr His Gly Phe Asn Leu Glu Glu Ala Ala Arg  
                                  1425                      1430                      1435                      1440

Cys Met Arg Ser Leu Lys Ala Pro Ala Val Val Ser Val Ser Ser Pro  
                                  1445                      1450                      1455

Asp Ala Val Thr Thr Tyr Asn Gly Tyr Leu Thr Ser Ser Ser Lys Thr  
                                  1460                      1465                      1470

Ser Glu Glu His Phe Val Glu Thr Val Ser Leu Ala Gly Ser Tyr Arg  
                                  1475                      1480                      1485

Asp Trp Ser Tyr Ser Gly Gln Arg Thr Glu Leu Gly Val Glu Phe Leu  
                                  1490                      1495                      1500

Lys Arg Gly Asp Lys Ile Val Tyr His Thr Leu Glu Ser Pro Val Glu  
                                  1505                      1510                      1515                      1520

Phe His Leu Asp Gly Glu Val Leu Ser Leu Asp Lys Leu Lys Ser Leu

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1525                               1530                               1535
Leu Ser Leu Arg Glu Val Lys Thr Ile Lys Val Phe Thr Thr Val Asp
1540                               1545                               1550
Asn Thr Asn Leu His Thr Gln Leu Val Asp Met Ser Met Thr Tyr Gly
1555                               1560                               1565
Gln Gln Phe Gly Pro Thr Tyr Leu Asp Gly Ala Asp Val Thr Lys Ile
1570                               1575                               1580
Lys Pro His Val Asn His Glu Gly Lys Thr Phe Phe Val Leu Pro Ser
1585                               1590                               1600
Asp Asp Thr Leu Arg Ser Glu Ala Phe Glu Tyr Tyr His Thr Leu Asp
1605                               1610                               1615
Glu Ser Phe Leu Gly Arg Tyr Met Ser Ala Leu Asn His Thr Lys Lys
1620                               1625                               1630
Trp Lys Phe Pro Gln Val Gly Gly Leu Thr Ser Ile Lys Trp Ala Asp
1635                               1640                               1645
Asn Asn Cys Tyr Leu Ser Ser Val Leu Leu Ala Leu Gln Gln Leu Glu
1650                               1655                               1660
Val Lys Phe Asn Ala Pro Ala Leu Gln Glu Ala Tyr Tyr Arg Ala Arg
1665                               1670                               1680
Ala Gly Asp Ala Ala Asn Phe Cys Ala Leu Ile Leu Ala Tyr Ser Asn
1685                               1690                               1695
Lys Thr Val Gly Glu Leu Gly Asp Val Arg Glu Thr Met Thr His Leu
1700                               1705                               1710
Leu Gln His Ala Asn Leu Glu Ser Ala Lys Arg Val Leu Asn Val Val
1715                               1720                               1725
Cys Lys His Cys Gly Gln Lys Thr Thr Thr Leu Thr Gly Val Glu Ala
1730                               1735                               1740
Val Met Tyr Met Gly Thr Leu Ser Tyr Asp Asn Leu Lys Thr Gly Val
1745                               1750                               1755
Ser Ile Pro Cys Val Cys Gly Arg Asp Ala Thr Gln Tyr Leu Val Gln
1765                               1770                               1775
Gln Glu Ser Ser Phe Val Met Met Ser Ala Pro Pro Ala Glu Tyr Lys
1780                               1785                               1790
Leu Gln Gln Gly Thr Phe Leu Cys Ala Asn Glu Tyr Thr Gly Asn Tyr
1795                               1800                               1805
Gln Cys Gly His Tyr Thr His Ile Thr Ala Lys Glu Thr Leu Tyr Arg
1810                               1815                               1820
Ile Asp Gly Ala His Leu Thr Lys Met Ser Glu Tyr Lys Gly Pro Val
1825                               1830                               1835
Thr Asp Val Phe Tyr Lys Glu Thr Ser Tyr Thr Thr Thr Ile Lys Pro
1845                               1850                               1855
Val Ser Tyr Lys Leu Asp Gly Val Thr Tyr Thr Glu Ile Glu Pro Lys

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1860 1865 1870  
 Leu Asp Gly Tyr Tyr Lys Lys Asp Asn Ala Tyr Tyr Thr Glu Gln Pro  
 1875 1880 1885  
 Ile Asp Leu Val Pro Thr Gln Pro Leu Pro Asn Ala Ser Phe Asp Asn  
 1890 1895 1900  
 Phe Lys Leu Thr Cys Ser Asn Thr Lys Phe Ala Asp Asp Leu Asn Gln  
 1905 1910 1915 1920  
 Met Thr Gly Phe Thr Lys Pro Ala Ser Arg Glu Leu Ser Val Thr Phe  
 1925 1930 1935  
 Phe Pro Asp Leu Asn Gly Asp Val Val Ala Ile Asp Tyr Arg His Tyr  
 1940 1945 1950  
 Ser Ala Ser Phe Lys Lys Gly Ala Lys Leu Leu His Lys Pro Ile Val  
 1955 1960 1965  
 Trp His Ile Asn Gln Ala Thr Thr Lys Thr Thr Phe Lys Pro Asn Thr  
 1970 1975 1980  
 Trp Cys Leu Arg Cys Leu Trp Ser Thr Lys Pro Val Asp Thr Ser Asn  
 1985 1990 1995 2000  
 Ser Phe Glu Val Leu Ala Val Glu Asp Thr Gln Gly Met Asp Asn Leu  
 2005 2010 2015  
 Ala Cys Glu Ser Gln Gln Pro Thr Ser Glu Glu Val Val Glu Asn Pro  
 2020 2025 2030  
 Thr Ile Gln Lys Glu Val Ile Glu Cys Asp Val Lys Thr Thr Glu Val  
 2035 2040 2045  
 Val Gly Asn Val Ile Leu Lys Pro Ser Asp Glu Gly Val Lys Val Thr  
 2050 2055 2060  
 Gln Glu Leu Gly His Glu Asp Leu Met Ala Ala Tyr Val Glu Asn Thr  
 2065 2070 2075 2080  
 Ser Ile Thr Ile Lys Lys Pro Asn Glu Leu Ser Leu Ala Leu Gly Leu  
 2085 2090 2095  
 Lys Thr Ile Ala Thr His Gly Ile Ala Ala Ile Asn Ser Val Pro Trp  
 2100 2105 2110  
 Ser Lys Ile Leu Ala Tyr Val Lys Pro Phe Leu Gly Gln Ala Ala Ile  
 2115 2120 2125  
 Thr Thr Ser Asn Cys Ala Lys Arg Leu Ala Gln Arg Val Phe Asn Asn  
 2130 2135 2140  
 Tyr Met Pro Tyr Val Phe Thr Leu Leu Phe Gln Leu Cys Thr Phe Thr  
 2145 2150 2155 2160  
 Lys Ser Thr Asn Ser Arg Ile Arg Ala Ser Leu Pro Thr Thr Ile Ala  
 2165 2170 2175  
 Lys Asn Ser Val Lys Ser Val Ala Lys Leu Cys Leu Asp Ala Gly Ile  
 2180 2185 2190  
 Asn Tyr Val Lys Ser Pro Lys Phe Ser Lys Leu Phe Thr Ile Ala Met

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2195 2200 2205

Trp Leu Leu Leu Leu Ser Ile Cys Leu Gly Ser Leu Ile Cys Val Thr  
2210 2215 2220

Ala Ala Phe Gly Val Leu Leu Ser Asn Phe Gly Ala Pro Ser Tyr Cys  
2225 2230 2235 2240

Asn Gly Val Arg Glu Leu Tyr Leu Asn Ser Ser Asn Val Thr Thr Met  
2245 2250 2255

Asp Phe Cys Glu Gly Ser Phe Pro Cys Ser Ile Cys Leu Ser Gly Leu  
2260 2265 2270

Asp Ser Leu Asp Ser Tyr Pro Ala Leu Glu Thr Ile Gln Val Thr Ile  
2275 2280 2285

Ser Ser Tyr Lys Leu Asp Leu Thr Ile Leu Gly Leu Ala Ala Glu Trp  
2290 2295 2300

Val Leu Ala Tyr Met Leu Phe Thr Lys Phe Phe Tyr Leu Leu Gly Leu  
2305 2310 2315 2320

Ser Ala Ile Met Gln Val Phe Phe Gly Tyr Phe Ala Ser His Phe Ile  
2325 2330 2335

Ser Asn Ser Trp Leu Met Trp Phe Ile Ile Ser Ile Val Gln Met Ala  
2340 2345 2350

Pro Val Ser Ala Met Val Arg Met Tyr Ile Phe Phe Ala Ser Phe Tyr  
2355 2360 2365

Tyr Ile Trp Lys Ser Tyr Val His Ile Met Asp Gly Cys Thr Ser Ser  
2370 2375 2380

Thr Cys Met Met Cys Tyr Lys Arg Asn Arg Ala Thr Arg Val Glu Cys  
2385 2390 2395 2400

Thr Thr Ile Val Asn Gly Met Lys Arg Ser Phe Tyr Val Tyr Ala Asn  
2405 2410 2415

Gly Gly Arg Gly Phe Cys Lys Thr His Asn Trp Asn Cys Leu Asn Cys  
2420 2425 2430

Asp Thr Phe Cys Thr Gly Ser Thr Phe Ile Ser Asp Glu Val Ala Arg  
2435 2440 2445

Asp Leu Ser Leu Gln Phe Lys Arg Pro Ile Asn Pro Thr Asp Gln Ser  
2450 2455 2460

Ser Tyr Ile Val Asp Ser Val Ala Val Lys Asn Gly Ala Leu His Leu  
2465 2470 2475 2480

Tyr Phe Asp Lys Ala Gly Gln Lys Thr Tyr Glu Arg His Pro Leu Ser  
2485 2490 2495

His Phe Val Asn Leu Asp Asn Leu Arg Ala Asn Asn Thr Lys Gly Ser  
2500 2505 2510

Leu Pro Ile Asn Val Ile Val Phe Asp Gly Lys Ser Lys Cys Asp Glu  
2515 2520 2525

Ser Ala Ser Lys Ser Ala Ser Val Tyr Tyr Ser Gln Leu Met Cys Gln

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2530                      2535                      2540  
 Pro Ile Leu Leu Leu Asp Gln Ala Leu Val Ser Asp Val Gly Asp Ser  
 2545                      2550                      2555                      2560  
 Thr Glu Val Ser Val Lys Met Phe Asp Ala Tyr Val Asp Thr Phe Ser  
                                  2565                      2570                      2575  
 Ala Thr Phe Ser Val Pro Met Glu Lys Leu Lys Ala Leu Val Ala Thr  
                                  2580                      2585                      2590  
 Ala His Ser Glu Leu Ala Lys Gly Val Ala Leu Asp Gly Val Leu Ser  
                                  2595                      2600                      2605  
 Thr Phe Val Ser Ala Ala Arg Gln Gly Val Val Asp Thr Asp Val Asp  
                                  2610                      2615                      2620  
 Thr Lys Asp Val Ile Glu Cys Leu Lys Leu Ser His His Ser Asp Leu  
 2625                      2630                      2635                      2640  
 Glu Val Thr Gly Asp Ser Cys Asn Asn Phe Met Leu Thr Tyr Asn Lys  
                                  2645                      2650                      2655  
 Val Glu Asn Met Thr Pro Arg Asp Leu Gly Ala Cys Ile Asp Cys Asn  
                                  2660                      2665                      2670  
 Ala Arg His Ile Asn Ala Gln Val Ala Lys Ser His Asn Val Ser Leu  
                                  2675                      2680                      2685  
 Ile Trp Asn Val Lys Asp Tyr Met Ser Leu Ser Glu Gln Leu Arg Lys  
                                  2690                      2695                      2700  
 Gln Ile Arg Ser Ala Ala Lys Lys Asn Asn Ile Pro Phe Arg Leu Thr  
 2705                      2710                      2715                      2720  
 Cys Ala Thr Thr Arg Gln Val Val Asn Val Ile Thr Thr Lys Ile Ser  
                                  2725                      2730                      2735  
 Leu Lys Gly Gly Lys Ile Val Ser Thr Cys Phe Lys Leu Met Leu Lys  
                                  2740                      2745                      2750  
 Ala Thr Leu Leu Cys Val Leu Ala Ala Leu Val Cys Tyr Ile Val Met  
                                  2755                      2760                      2765  
 Pro Val His Thr Leu Ser Ile His Asp Gly Tyr Thr Asn Glu Ile Ile  
                                  2770                      2775                      2780  
 Gly Tyr Lys Ala Ile Gln Asp Gly Val Thr Arg Asp Ile Ile Ser Thr  
 2785                      2790                      2795                      2800  
 Asp Asp Cys Phe Ala Asn Lys His Ala Gly Phe Asp Ala Trp Phe Ser  
                                  2805                      2810                      2815  
 Gln Arg Gly Gly Ser Tyr Lys Asn Asp Lys Ser Cys Pro Val Val Ala  
                                  2820                      2825                      2830  
 Ala Ile Ile Thr Arg Glu Ile Gly Phe Ile Val Pro Gly Leu Pro Gly  
                                  2835                      2840                      2845  
 Thr Val Leu Arg Ala Ile Asn Gly Asp Phe Leu His Phe Leu Pro Arg  
                                  2850                      2855                      2860  
 Val Phe Ser Ala Val Gly Asn Ile Cys Tyr Thr Pro Ser Lys Leu Ile

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2865                      2870                      2875                      2880

Glu Tyr Ser Asp Phe Ala Thr Ser Ala Cys Val Leu Ala Ala Glu Cys  
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Thr Ile Phe Lys Asp Ala Met Gly Lys Pro Val Pro Tyr Cys Tyr Asp  
                                 2900                      2905                      2910

Thr Asn Leu Leu Glu Gly Ser Ile Ser Tyr Ser Glu Leu Arg Pro Asp  
                                 2915                      2920                      2925

Thr Arg Tyr Val Leu Met Asp Gly Ser Ile Ile Gln Phe Pro Asn Thr  
                                 2930                      2935                      2940

Tyr Leu Glu Gly Ser Val Arg Val Val Thr Thr Phe Asp Ala Glu Tyr  
2945                      2950                      2955                      2960

Cys Arg His Gly Thr Cys Glu Arg Ser Glu Val Gly Ile Cys Leu Ser  
                                 2965                      2970                      2975

Thr Ser Gly Arg Trp Val Leu Asn Asn Glu His Tyr Arg Ala Leu Ser  
                                 2980                      2985                      2990

Gly Val Phe Cys Gly Val Asp Ala Met Asn Leu Ile Ala Asn Ile Phe  
                                 2995                      3000                      3005

Thr Pro Leu Val Gln Pro Val Gly Ala Leu Asp Val Ser Ala Ser Val  
                                 3010                      3015                      3020

Val Ala Gly Gly Ile Ile Ala Ile Leu Val Thr Cys Ala Ala Tyr Tyr  
3025                      3030                      3035                      3040

Phe Met Lys Phe Arg Arg Val Phe Gly Glu Tyr Asn His Val Val Ala  
                                 3045                      3050                      3055

Ala Asn Ala Leu Leu Phe Leu Met Ser Phe Thr Ile Leu Cys Leu Val  
                                 3060                      3065                      3070

Pro Ala Tyr Ser Phe Leu Pro Gly Val Tyr Ser Val Phe Tyr Leu Tyr  
                                 3075                      3080                      3085

Leu Thr Phe Tyr Phe Thr Asn Asp Val Ser Phe Leu Ala His Leu Gln  
                                 3090                      3095                      3100

Trp Phe Ala Met Phe Ser Pro Ile Val Pro Phe Trp Ile Thr Ala Ile  
3105                      3110                      3115                      3120

Tyr Val Phe Cys Ile Ser Leu Lys His Cys His Trp Phe Phe Asn Asn  
                                 3125                      3130                      3135

Tyr Leu Arg Lys Arg Val Met Phe Asn Gly Val Thr Phe Ser Thr Phe  
                                 3140                      3145                      3150

Glu Glu Ala Ala Leu Cys Thr Phe Leu Leu Asn Lys Glu Met Tyr Leu  
                                 3155                      3160                      3165

Lys Leu Arg Ser Glu Thr Leu Leu Pro Leu Thr Gln Tyr Asn Arg Tyr  
                                 3170                      3175                      3180

Leu Ala Leu Tyr Asn Lys Tyr Lys Tyr Phe Ser Gly Ala Leu Asp Thr  
3185                      3190                      3195                      3200

Thr Ser Tyr Arg Glu Ala Ala Cys Cys His Leu Ala Lys Ala Leu Asn

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3205                      3210                      3215  
 Asp Phe Ser Asn Ser Gly Ala Asp Val Leu Tyr Gln Pro Pro Gln Thr  
                          3220                      3225                      3230  
 Ser Ile Thr Ser Ala Val Leu Gln Ser Gly Phe Arg Lys Met Ala Phe  
                          3235                      3240                      3245  
 Pro Ser Gly Lys Val Glu Gly Cys Met Val Gln Val Thr Cys Gly Thr  
                          3250                      3255                      3260  
 Thr Thr Leu Asn Gly Leu Trp Leu Asp Asp Thr Val Tyr Cys Pro Arg  
 3265                      3270                      3275                      3280  
 His Val Ile Cys Thr Ala Glu Asp Met Leu Asn Pro Asn Tyr Glu Asp  
                          3285                      3290                      3295  
 Leu Leu Ile Arg Lys Ser Asn His Ser Phe Leu Val Gln Ala Gly Asn  
                          3300                      3305                      3310  
 Val Gln Leu Arg Val Ile Gly His Ser Met Gln Asn Cys Leu Leu Arg  
                          3315                      3320                      3325  
 Leu Lys Val Asp Thr Ser Asn Pro Lys Thr Pro Lys Tyr Lys Phe Val  
                          3330                      3335                      3340  
 Arg Ile Gln Pro Gly Gln Thr Phe Ser Val Leu Ala Cys Tyr Asn Gly  
 3345                      3350                      3355                      3360  
 Ser Pro Ser Gly Val Tyr Gln Cys Ala Met Arg Pro Asn His Thr Ile  
                          3365                      3370                      3375  
 Lys Gly Ser Phe Leu Asn Gly Ser Cys Gly Ser Val Gly Phe Asn Ile  
                          3380                      3385                      3390  
 Asp Tyr Asp Cys Val Ser Phe Cys Tyr Met His His Met Glu Leu Pro  
                          3395                      3400                      3405  
 Thr Gly Val His Ala Gly Thr Asp Leu Glu Gly Lys Phe Tyr Gly Pro  
                          3410                      3415                      3420  
 Phe Val Asp Arg Gln Thr Ala Gln Ala Ala Gly Thr Asp Thr Thr Ile  
 3425                      3430                      3435                      3440  
 Thr Leu Asn Val Leu Ala Trp Leu Tyr Ala Ala Val Ile Asn Gly Asp  
                          3445                      3450                      3455  
 Arg Trp Phe Leu Asn Arg Phe Thr Thr Thr Leu Asn Asp Phe Asn Leu  
                          3460                      3465                      3470  
 Val Ala Met Lys Tyr Asn Tyr Glu Pro Leu Thr Gln Asp His Val Asp  
                          3475                      3480                      3485  
 Ile Leu Gly Pro Leu Ser Ala Gln Thr Gly Ile Ala Val Leu Asp Met  
                          3490                      3495                      3500  
 Cys Ala Ala Leu Lys Glu Leu Leu Gln Asn Gly Met Asn Gly Arg Thr  
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 Ile Leu Gly Ser Thr Ile Leu Glu Asp Glu Phe Thr Pro Phe Asp Val  
                          3525                      3530                      3535  
 Val Arg Gln Cys Ser Gly Val Thr Phe Gln Gly Lys Phe Lys Lys Ile



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3540  
 Val Lys Gly Thr His His Trp Met Leu Leu Thr Phe Leu Thr Ser Leu  
 3555 3560 3565  
 Leu Ile Leu Val Gln Ser Thr Gln Trp Ser Leu Phe Phe Phe Val Tyr  
 3570 3575 3580  
 Glu Asn Ala Phe Leu Pro Phe Thr Leu Gly Ile Met Ala Ile Ala Ala  
 3585 3590 3595 3600  
 Cys Ala Met Leu Leu Val Lys His Lys His Ala Phe Leu Cys Leu Phe  
 3605 3610 3615  
 Leu Leu Pro Ser Leu Ala Thr Val Ala Tyr Phe Asn Met Val Tyr Met  
 3620 3625 3630  
 Pro Ala Ser Trp Val Met Arg Ile Met Thr Trp Leu Glu Leu Ala Asp  
 3635 3640 3645  
 Thr Ser Leu Ser Gly Tyr Arg Leu Lys Asp Cys Val Met Tyr Ala Ser  
 3650 3655 3660  
 Ala Leu Val Leu Leu Ile Leu Met Thr Ala Arg Thr Val Tyr Asp Asp  
 3665 3670 3675 3680  
 Ala Ala Arg Arg Val Trp Thr Leu Met Asn Val Ile Thr Leu Val Tyr  
 3685 3690 3695  
 Lys Val Tyr Tyr Gly Asn Ala Leu Asp Gln Ala Ile Ser Met Trp Ala  
 3700 3705 3710  
 Leu Val Ile Ser Val Thr Ser Asn Tyr Ser Gly Val Val Thr Thr Ile  
 3715 3720 3725  
 Met Phe Leu Ala Arg Ala Ile Val Phe Val Cys Val Glu Tyr Tyr Pro  
 3730 3735 3740  
 Leu Leu Phe Ile Thr Gly Asn Thr Leu Gln Cys Ile Met Leu Val Tyr  
 3745 3750 3755 3760  
 Cys Phe Leu Gly Tyr Cys Cys Cys Cys Tyr Phe Gly Leu Phe Cys Leu  
 3765 3770 3775  
 Leu Asn Arg Tyr Phe Arg Leu Thr Leu Gly Val Tyr Asp Tyr Leu Val  
 3780 3785 3790  
 Ser Thr Gln Glu Phe Arg Tyr Met Asn Ser Gln Gly Leu Leu Pro Pro  
 3795 3800 3805  
 Lys Ser Ser Ile Asp Ala Phe Lys Leu Asn Ile Lys Leu Leu Gly Ile  
 3810 3815 3820  
 Gly Gly Lys Pro Cys Ile Lys Val Ala Thr Val Gln Ser Lys Met Ser  
 3825 3830 3835 3840  
 Asp Val Lys Cys Thr Ser Val Val Leu Leu Ser Val Leu Gln Gln Leu  
 3845 3850 3855  
 Arg Val Glu Ser Ser Ser Lys Leu Trp Ala Gln Cys Val Gln Leu His  
 3860 3865 3870  
 Asn Asp Ile Leu Leu Ala Lys Asp Thr Thr Glu Ala Phe Glu Lys Met

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3875                      3880                      3885  
 Val Ser Leu Leu Ser Val Leu Leu Ser Met Gln Gly Ala Val Asp Ile  
 3890                      3895                      3900  
 Asn Arg Leu Cys Glu Glu Met Leu Asp Asn Arg Ala Thr Leu Gln Ala  
 3905                      3910                      3915                      3920  
 Ile Ala Ser Glu Phe Ser Ser Leu Pro Ser Tyr Ala Ala Tyr Ala Thr  
 3925                      3930                      3935  
 Ala Gln Glu Ala Tyr Glu Gln Ala Val Ala Asn Gly Asp Ser Glu Val  
 3940                      3945                      3950  
 Val Leu Lys Lys Leu Lys Lys Ser Leu Asn Val Ala Lys Ser Glu Phe  
 3955                      3960                      3965  
 Asp Arg Asp Ala Ala Met Gln Arg Lys Leu Glu Lys Met Ala Asp Gln  
 3970                      3975                      3980  
 Ala Met Thr Gln Met Tyr Lys Gln Ala Arg Ser Glu Asp Lys Arg Ala  
 3985                      3990                      3995                      4000  
 Lys Val Thr Ser Ala Met Gln Thr Met Leu Phe Thr Met Leu Arg Lys  
 4005                      4010                      4015  
 Leu Asp Asn Asp Ala Leu Asn Asn Ile Ile Asn Asn Ala Arg Asp Gly  
 4020                      4025                      4030  
 Cys Val Pro Leu Asn Ile Ile Pro Leu Thr Thr Ala Ala Lys Leu Met  
 4035                      4040                      4045  
 Val Val Val Pro Asp Tyr Gly Thr Tyr Lys Asn Thr Cys Asp Gly Asn  
 4050                      4055                      4060  
 Thr Phe Thr Tyr Ala Ser Ala Leu Trp Glu Ile Gln Gln Val Val Asp  
 4065                      4070                      4075                      4080  
 Ala Asp Ser Lys Ile Val Gln Leu Ser Glu Ile Asn Met Asp Asn Ser  
 4085                      4090                      4095  
 Pro Asn Leu Ala Trp Pro Leu Ile Val Thr Ala Leu Arg Ala Asn Ser  
 4100                      4105                      4110  
 Ala Val Lys Leu Gln Asn Asn Glu Leu Ser Pro Val Ala Leu Arg Gln  
 4115                      4120                      4125  
 Met Ser Cys Ala Ala Gly Thr Thr Gln Thr Ala Cys Thr Asp Asp Asn  
 4130                      4135                      4140  
 Ala Leu Ala Tyr Tyr Asn Asn Ser Lys Gly Gly Arg Phe Val Leu Ala  
 4145                      4150                      4155                      4160  
 Leu Leu Ser Asp His Gln Asp Leu Lys Trp Ala Arg Phe Pro Lys Ser  
 4165                      4170                      4175  
 Asp Gly Thr Gly Thr Ile Tyr Thr Glu Leu Glu Pro Pro Cys Arg Phe  
 4180                      4185                      4190  
 Val Thr Asp Thr Pro Lys Gly Pro Lys Val Lys Tyr Leu Tyr Phe Ile  
 4195                      4200                      4205  
 Lys Gly Leu Asn Asn Leu Asn Arg Gly Met Val Leu Gly Ser Leu Ala

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4210

4215

4220

Ala Thr Val Arg Leu Gln Ala Gly Asn Ala Thr Glu Val Pro Ala Asn  
 4225 4230 4235 4240  
 Ser Thr Val Leu Ser Phe Cys Ala Phe Ala Val Asp Pro Ala Lys Ala  
 4245 4250 4255  
 Tyr Lys Asp Tyr Leu Ala Ser Gly Gly Gln Pro Ile Thr Asn Cys Val  
 4260 4265 4270  
 Lys Met Leu Cys Thr His Thr Gly Thr Gly Gln Ala Ile Thr Val Thr  
 4275 4280 4285  
 Pro Glu Ala Asn Met Asp Gln Glu Ser Phe Gly Gly Ala Ser Cys Cys  
 4290 4295 4300  
 Leu Tyr Cys Arg Cys His Ile Asp His Pro Asn Pro Lys Gly Phe Cys  
 4305 4310 4315 4320  
 Asp Leu Lys Gly Lys Tyr Val Gln Ile Pro Thr Thr Cys Ala Asn Asp  
 4325 4330 4335  
 Pro Val Gly Phe Thr Leu Arg Asn Thr Val Cys Thr Val Cys Gly Met  
 4340 4345 4350  
 Trp Lys Gly Tyr Gly Cys Ser Cys Asp Gln Leu Arg Glu Pro Leu Met  
 4355 4360 4365  
 Gln Ser Ala Asp Ala Ser Thr Phe Leu Asn Gly Phe Ala Val  
 4370 4375 4380

<210> 6040

<211> 163

<212> PRT

<213> SARS coronavirus

<400> 6040

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 20 25 30  
 Ile Ser Val Ala Gln Met Gly Thr Leu Leu Ile Ala Ser Lys Ile Phe  
 35 40 45  
 Ser His Ala Arg Ala Ser Gln Cys Ala Leu Phe Pro Asn Asn Leu Ile  
 50 55 60  
 Thr Ser Ser Arg Arg Glu Val Ser Thr Ala Ala Val Thr Met Ser Met  
 65 70 75 80  
 Lys Leu Pro Gly Ser Leu Ser Ala Leu Ile Arg Ala Thr Ser Thr Arg  
 85 90 95  
 His Pro Ser Lys Leu Arg Val Pro Arg Asn Leu Thr Leu Ser Lys Gly  
 100 105 110  
 Asn Ala Gln Ser Leu Cys Phe Leu Leu Thr Gln Lys Ser Lys Ser Phe  
 115 120 125  
 Asn His Val Leu Lys Arg Lys Arg Leu Arg Val Ser Trp Gly Val Tyr

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130

135

140

Ala Leu Cys Thr Leu Leu His Leu His Arg Ser Val Thr Ile Cys Thr  
145 150 155 160

Cys Leu Pro

<210> 6041  
<211> 2628  
<212> PRT  
<213> SARS coronavirus

<400> 6041  
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Cys Pro Ala Val Ala Val His Asp Phe Phe Lys Phe Arg Val Asp Gly  
20 25 30

Asp Met Val Pro His Ile Ser Arg Gln Arg Leu Thr Lys Tyr Thr Met  
35 40 45

Ala Asp Leu Val Tyr Ala Leu Arg His Phe Asp Glu Gly Asn Cys Asp  
50 55 60

Thr Leu Lys Glu Ile Leu Val Thr Tyr Asn Cys Cys Asp Asp Asp Tyr  
65 70 75 80

Phe Asn Lys Lys Asp Trp Tyr Asp Phe Val Glu Asn Pro Asp Ile Leu  
85 90 95

Arg Val Tyr Ala Asn Leu Gly Glu Arg Val Arg Gln Ser Leu Leu Lys  
100 105 110

Thr Val Gln Phe Cys Asp Ala Met Arg Asp Ala Gly Ile Val Gly Val  
115 120 125

Leu Thr Leu Asp Asn Gln Asp Leu Asn Gly Asn Trp Tyr Asp Phe Gly  
130 135 140

Asp Phe Val Gln Val Ala Pro Gly Cys Gly Val Pro Ile Val Asp Ser  
145 150 155 160

Tyr Tyr Ser Leu Leu Met Pro Ile Leu Thr Leu Thr Arg Ala Leu Ala  
165 170 175

Ala Glu Ser His Met Asp Ala Asp Leu Ala Lys Pro Leu Ile Lys Trp  
180 185 190

Asp Leu Leu Lys Tyr Asp Phe Thr Glu Glu Arg Leu Cys Leu Phe Asp  
195 200 205

Arg Tyr Phe Lys Tyr Trp Asp Gln Thr Tyr His Pro Asn Cys Ile Asn  
210 215 220

Cys Leu Asp Asp Arg Cys Ile Leu His Cys Ala Asn Phe Asn Val Leu  
225 230 235 240

Phe Ser Thr Val Phe Pro Pro Thr Ser Phe Gly Pro Leu Val Arg Lys  
245 250 255

Ile Phe Val Asp Gly Val Pro Phe Val Val Ser Thr Gly Tyr His Phe

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260	265	270
Arg Glu Leu Gly Val Val His Asn Gln Asp Val Asn Leu His Ser Ser	275	280
Arg Leu Ser Phe Lys Glu Leu Leu Val Tyr Ala Ala Asp Pro Ala Met	290	300
His Ala Ala Ser Gly Asn Leu Leu Leu Asp Lys Arg Thr Thr Cys Phe	305	310
Ser Val Ala Ala Leu Thr Asn Asn Val Ala Phe Gln Thr Val Lys Pro	325	330
Gly Asn Phe Asn Lys Asp Phe Tyr Asp Phe Ala Val Ser Lys Gly Phe	340	345
Phe Lys Glu Gly Ser Ser Val Glu Leu Lys His Phe Phe Phe Ala Gln	355	360
Asp Gly Asn Ala Ala Ile Ser Asp Tyr Asp Tyr Tyr Arg Tyr Asn Leu	370	375
Pro Thr Met Cys Asp Ile Arg Gln Leu Leu Phe Val Val Glu Val Val	385	390
Asp Lys Tyr Phe Asp Cys Tyr Asp Gly Gly Cys Ile Asn Ala Asn Gln	405	410
Val Ile Val Asn Asn Leu Asp Lys Ser Ala Gly Phe Pro Phe Asn Lys	420	425
Trp Gly Lys Ala Arg Leu Tyr Tyr Asp Ser Met Ser Tyr Glu Asp Gln	435	440
Asp Ala Leu Phe Ala Tyr Thr Lys Arg Asn Val Ile Pro Thr Ile Thr	450	455
Gln Met Asn Leu Lys Tyr Ala Ile Ser Ala Lys Asn Arg Ala Arg Thr	465	470
Val Ala Gly Val Ser Ile Cys Ser Thr Met Thr Asn Arg Gln Phe His	485	490
Gln Lys Leu Leu Lys Ser Ile Ala Ala Thr Arg Gly Ala Thr Val Val	500	505
Ile Gly Thr Ser Lys Phe Tyr Gly Gly Trp His Asn Met Leu Lys Thr	515	520
Val Tyr Ser Asp Val Glu Thr Pro His Leu Met Gly Trp Asp Tyr Pro	530	535
Lys Cys Asp Arg Ala Met Pro Asn Met Leu Arg Ile Met Ala Ser Leu	545	550
Val Leu Ala Arg Lys His Asn Thr Cys Cys Asn Leu Ser His Arg Phe	565	570
Tyr Arg Leu Ala Asn Glu Cys Ala Gln Val Leu Ser Glu Met Val Met	580	585
Cys Gly Gly Ser Leu Tyr Val Lys Pro Gly Gly Thr Ser Ser Gly Asp		

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595		600		605
Ala Thr Thr Ala Tyr Ala Asn Ser Val Phe Asn Ile Cys Gln Ala Val	610	615	620	
Thr Ala Asn Val Asn Ala Leu Leu Ser Thr Asp Gly Asn Lys Ile Ala	625	630	635	640
Asp Lys Tyr Val Arg Asn Leu Gln His Arg Leu Tyr Glu Cys Leu Tyr	645	650	655	
Arg Asn Arg Asp Val Asp His Glu Phe Val Asp Glu Phe Tyr Ala Tyr	660	665	670	
Leu Arg Lys His Phe Ser Met Met Ile Leu Ser Asp Asp Ala Val Val	675	680	685	
Cys Tyr Asn Ser Asn Tyr Ala Ala Gln Gly Leu Val Ala Ser Ile Lys	690	695	700	
Asn Phe Lys Ala Val Leu Tyr Tyr Gln Asn Asn Val Phe Met Ser Glu	705	710	715	720
Ala Lys Cys Trp Thr Glu Thr Asp Leu Thr Lys Gly Pro His Glu Phe	725	730	735	
Cys Ser Gln His Thr Met Leu Val Lys Gln Gly Asp Asp Tyr Val Tyr	740	745	750	
Leu Pro Tyr Pro Asp Pro Ser Arg Ile Leu Gly Ala Gly Cys Phe Val	755	760	765	
Asp Asp Ile Val Lys Thr Asp Gly Thr Leu Met Ile Glu Arg Phe Val	770	775	780	
Ser Leu Ala Ile Asp Ala Tyr Pro Leu Thr Lys His Pro Asn Gln Glu	785	790	795	800
Tyr Ala Asp Val Phe His Leu Tyr Leu Gln Tyr Ile Arg Lys Leu His	805	810	815	
Asp Glu Leu Thr Gly His Met Leu Asp Met Tyr Ser Val Met Leu Thr	820	825	830	
Asn Asp Asn Thr Ser Arg Tyr Trp Glu Pro Glu Phe Tyr Glu Ala Met	835	840	845	
Tyr Thr Pro His Thr Val Leu Gln Ala Val Gly Ala Cys Val Leu Cys	850	855	860	
Asn Ser Gln Thr Ser Leu Arg Cys Gly Ala Cys Ile Arg Arg Pro Phe	865	870	875	880
Leu Cys Cys Lys Cys Cys Tyr Asp His Val Ile Ser Thr Ser His Lys	885	890	895	
Leu Val Leu Ser Val Asn Pro Tyr Val Cys Asn Ala Pro Gly Cys Asp	900	905	910	
Val Thr Asp Val Thr Gln Leu Tyr Leu Gly Gly Met Ser Tyr Tyr Cys	915	920	925	
Lys Ser His Lys Pro Pro Ile Ser Phe Pro Leu Cys Ala Asn Gly Gln				

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930

935

940

Val Phe Gly Leu Tyr Lys Asn Thr Cys Val Gly Ser Asp Asn Val Thr  
 945 950 955 960  
 Asp Phe Asn Ala Ile Ala Thr Cys Asp Trp Thr Asn Ala Gly Asp Tyr  
 965 970 975  
 Ile Leu Ala Asn Thr Cys Thr Glu Arg Leu Lys Leu Phe Ala Ala Glu  
 980 985 990  
 Thr Leu Lys Ala Thr Glu Glu Thr Phe Lys Leu Ser Tyr Gly Ile Ala  
 995 1000 1005  
 Thr Val Arg Glu Val Leu Ser Asp Arg Glu Leu His Leu Ser Trp Glu  
 1010 1015 1020  
 Val Gly Lys Pro Arg Pro Pro Leu Asn Arg Asn Tyr Val Phe Thr Gly  
 1025 1030 1035 1040  
 Tyr Arg Val Thr Lys Asn Ser Lys Val Gln Ile Gly Glu Tyr Thr Phe  
 1045 1050 1055  
 Glu Lys Gly Asp Tyr Gly Asp Ala Val Val Tyr Arg Gly Thr Thr Thr  
 1060 1065 1070  
 Tyr Lys Leu Asn Val Gly Asp Tyr Phe Val Leu Thr Ser His Thr Val  
 1075 1080 1085  
 Met Pro Leu Ser Ala Pro Thr Leu Val Pro Gln Glu His Tyr Val Arg  
 1090 1095 1100  
 Ile Thr Gly Leu Tyr Pro Thr Leu Asn Ile Ser Asp Glu Phe Ser Ser  
 1105 1110 1115 1120  
 Asn Val Ala Asn Tyr Gln Lys Val Gly Met Gln Lys Tyr Ser Thr Leu  
 1125 1130 1135  
 Gln Gly Pro Pro Gly Thr Gly Lys Ser His Phe Ala Ile Gly Leu Ala  
 1140 1145 1150  
 Leu Tyr Tyr Pro Ser Ala Arg Ile Val Tyr Thr Ala Cys Ser His Ala  
 1155 1160 1165  
 Ala Val Asp Ala Leu Cys Glu Lys Ala Leu Lys Tyr Leu Pro Ile Asp  
 1170 1175 1180  
 Lys Cys Ser Arg Ile Ile Pro Ala Arg Ala Arg Val Glu Cys Phe Asp  
 1185 1190 1195 1200  
 Lys Phe Lys Val Asn Ser Thr Leu Glu Gln Tyr Val Phe Cys Thr Val  
 1205 1210 1215  
 Asn Ala Leu Pro Glu Thr Thr Ala Asp Ile Val Val Phe Asp Glu Ile  
 1220 1225 1230  
 Ser Met Ala Thr Asn Tyr Asp Leu Ser Val Val Asn Ala Arg Leu Arg  
 1235 1240 1245  
 Ala Lys His Tyr Val Tyr Ile Gly Asp Pro Ala Gln Leu Pro Ala Pro  
 1250 1255 1260  
 Arg Thr Leu Leu Thr Lys Gly Thr Leu Glu Pro Glu Tyr Phe Asn Ser

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1265                      1270                      1275                      1280  
Val Cys Arg Leu Met Lys Thr Ile Gly Pro Asp Met Phe Leu Gly Thr  
                                 1285                      1290                      1295  
Cys Arg Arg Cys Pro Ala Glu Ile Val Asp Thr Val Ser Ala Leu Val  
                                 1300                      1305                      1310  
Tyr Asp Asn Lys Leu Lys Ala His Lys Asp Lys Ser Ala Gln Cys Phe  
                                 1315                      1320                      1325  
Lys Met Phe Tyr Lys Gly Val Ile Thr His Asp Val Ser Ser Ala Ile  
                                 1330                      1335                      1340  
Asn Arg Pro Gln Ile Gly Val Val Arg Glu Phe Leu Thr Arg Asn Pro  
1345                      1350                      1355                      1360  
Ala Trp Arg Lys Ala Val Phe Ile Ser Pro Tyr Asn Ser Gln Asn Ala  
                                 1365                      1370                      1375  
Val Ala Ser Lys Ile Leu Gly Leu Pro Thr Gln Thr Val Asp Ser Ser  
                                 1380                      1385                      1390  
Gln Gly Ser Glu Tyr Asp Tyr Val Ile Phe Thr Gln Thr Thr Glu Thr  
                                 1395                      1400                      1405  
Ala His Ser Cys Asn Val Asn Arg Phe Asn Val Ala Ile Thr Arg Ala  
                                 1410                      1415                      1420  
Lys Ile Gly Ile Leu Cys Ile Met Ser Asp Arg Asp Leu Tyr Asp Lys  
1425                      1430                      1435                      1440  
Leu Gln Phe Thr Ser Leu Glu Ile Pro Arg Arg Asn Val Ala Thr Leu  
                                 1445                      1450                      1455  
Gln Ala Glu Asn Val Thr Gly Leu Phe Lys Asp Cys Ser Lys Ile Ile  
                                 1460                      1465                      1470  
Thr Gly Leu His Pro Thr Gln Ala Pro Thr His Leu Ser Val Asp Ile  
                                 1475                      1480                      1485  
Lys Phe Lys Thr Glu Gly Leu Cys Val Asp Ile Pro Gly Ile Pro Lys  
                                 1490                      1495                      1500  
Asp Met Thr Tyr Arg Arg Leu Ile Ser Met Met Gly Phe Lys Met Asn  
1505                      1510                      1515                      1520  
Tyr Gln Val Asn Gly Tyr Pro Asn Met Phe Ile Thr Arg Glu Glu Ala  
                                 1525                      1530                      1535  
Ile Arg His Val Arg Ala Trp Ile Gly Phe Asp Val Glu Gly Cys His  
                                 1540                      1545                      1550  
Ala Thr Arg Asp Ala Val Gly Thr Asn Leu Pro Leu Gln Leu Gly Phe  
                                 1555                      1560                      1565  
Ser Thr Gly Val Asn Leu Val Ala Val Pro Thr Gly Tyr Val Asp Thr  
                                 1570                      1575                      1580  
Glu Asn Asn Thr Glu Phe Thr Arg Val Asn Ala Lys Pro Pro Pro Gly  
1585                      1590                      1595                      1600  
Asp Gln Phe Lys His Leu Ile Pro Leu Met Tyr Lys Gly Leu Pro Trp



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1605	1610	1615
Asn Val Val Arg Ile Lys Ile Val Gln Met Leu Ser Asp Thr Leu Lys		
1620	1625	1630
Gly Leu Ser Asp Arg Val Val Phe Val Leu Trp Ala His Gly Phe Glu		
1635	1640	1645
Leu Thr Ser Met Lys Tyr Phe Val Lys Ile Gly Pro Glu Arg Thr Cys		
1650	1655	1660
Cys Leu Cys Asp Lys Arg Ala Thr Cys Phe Ser Thr Ser Ser Asp Thr		
1665	1670	1680
Tyr Ala Cys Trp Asn His Ser Val Gly Phe Asp Tyr Val Tyr Asn Pro		
1685	1690	1695
Phe Met Ile Asp Val Gln Gln Trp Gly Phe Thr Gly Asn Leu Gln Ser		
1700	1705	1710
Asn His Asp Gln His Cys Gln Val His Gly Asn Ala His Val Ala Ser		
1715	1720	1725
Cys Asp Ala Ile Met Thr Arg Cys Leu Ala Val His Glu Cys Phe Val		
1730	1735	1740
Lys Arg Val Asp Trp Ser Val Glu Tyr Pro Ile Ile Gly Asp Glu Leu		
1745	1750	1755
Arg Val Asn Ser Ala Cys Arg Lys Val Gln His Met Val Val Lys Ser		
1765	1770	1775
Ala Leu Leu Ala Asp Lys Phe Pro Val Leu His Asp Ile Gly Asn Pro		
1780	1785	1790
Lys Ala Ile Lys Cys Val Pro Gln Ala Glu Val Glu Trp Lys Phe Tyr		
1795	1800	1805
Asp Ala Gln Pro Cys Ser Asp Lys Ala Tyr Lys Ile Glu Glu Leu Phe		
1810	1815	1820
Tyr Ser Tyr Ala Thr His His Asp Lys Phe Thr Asp Gly Val Cys Leu		
1825	1830	1835
Phe Trp Asn Cys Asn Val Asp Arg Tyr Pro Ala Asn Ala Ile Val Cys		
1845	1850	1855
Arg Phe Asp Thr Arg Val Leu Ser Asn Leu Asn Leu Pro Gly Cys Asp		
1860	1865	1870
Gly Gly Ser Leu Tyr Val Asn Lys His Ala Phe His Thr Pro Ala Phe		
1875	1880	1885
Asp Lys Ser Ala Phe Thr Asn Leu Lys Gln Leu Pro Phe Phe Tyr Tyr		
1890	1895	1900
Ser Asp Ser Pro Cys Glu Ser His Gly Lys Gln Val Val Ser Asp Ile		
1905	1910	1915
Asp Tyr Val Pro Leu Lys Ser Ala Thr Cys Ile Thr Arg Cys Asn Leu		
1925	1930	1935
Gly Gly Ala Val Cys Arg His His Ala Asn Glu Tyr Arg Gln Tyr Leu		

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1940	1945	1950
Asp Ala Tyr Asn Met Met Ile Ser Ala Gly Phe Ser Leu Trp Ile Tyr 1955 1960 1965		
Lys Gln Phe Asp Thr Tyr Asn Leu Trp Asn Thr Phe Thr Arg Leu Gln 1970 1975 1980		
Ser Leu Glu Asn Val Ala Tyr Asn Val Val Asn Lys Gly His Phe Asp 1985 1990 2000		
Gly His Ala Gly Glu Ala Pro Val Ser Ile Ile Asn Asn Ala Val Tyr 2005 2010 2015		
Thr Lys Val Asp Gly Ile Asp Val Glu Ile Phe Glu Asn Lys Thr Thr 2020 2025 2030		
Leu Pro Val Asn Val Ala Phe Glu Leu Trp Ala Lys Arg Asn Ile Lys 2035 2040 2045		
Pro Val Pro Glu Ile Lys Ile Leu Asn Asn Leu Gly Val Asp Ile Ala 2050 2055 2060		
Ala Asn Thr Val Ile Trp Asp Tyr Lys Arg Glu Ala Pro Ala His Val 2065 2070 2075 2080		
Ser Thr Ile Gly Val Cys Thr Met Thr Asp Ile Ala Lys Lys Pro Thr 2085 2090 2095		
Glu Ser Ala Cys Ser Ser Leu Thr Val Leu Phe Asp Gly Arg Val Glu 2100 2105 2110		
Gly Gln Val Asp Leu Phe Arg Asn Ala Arg Asn Gly Val Leu Ile Thr 2115 2120 2125		
Glu Gly Ser Val Lys Gly Leu Thr Pro Ser Lys Gly Pro Ala Gln Ala 2130 2135 2140		
Ser Val Asn Gly Val Thr Leu Ile Gly Glu Ser Val Lys Thr Gln Phe 2145 2150 2155 2160		
Asn Tyr Phe Lys Lys Val Asp Gly Ile Ile Gln Gln Leu Pro Glu Thr 2165 2170 2175		
Tyr Phe Thr Gln Ser Arg Asp Leu Glu Asp Phe Lys Pro Arg Ser Gln 2180 2185 2190		
Met Glu Thr Asp Phe Leu Glu Leu Ala Met Asp Glu Phe Ile Gln Arg 2195 2200 2205		
Tyr Lys Leu Glu Gly Tyr Ala Phe Glu His Ile Val Tyr Gly Asp Phe 2210 2215 2220		
Ser His Gly Gln Leu Gly Gly Leu His Leu Met Ile Gly Leu Ala Lys 2225 2230 2235 2240		
Arg Ser Gln Asp Ser Pro Leu Lys Leu Glu Asp Phe Ile Pro Met Asp 2245 2250 2255		
Ser Thr Val Lys Asn Tyr Phe Ile Thr Asp Ala Gln Thr Gly Ser Ser 2260 2265 2270		
Lys Cys Val Cys Ser Val Ile Asp Leu Leu Leu Asp Asp Phe Val Glu		

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2275                      2280                      2285  
 Ile Ile Lys Ser Gln Asp Leu Ser Val Ile Ser Lys Val Val Lys Val  
     2290                      2295                      2300  
 Thr Ile Asp Tyr Ala Glu Ile Ser Phe Met Leu Trp Cys Lys Asp Gly  
 2305                      2310                      2315                      2320  
 His Val Glu Thr Phe Tyr Pro Lys Leu Gln Ala Ser Arg Ala Trp Gln  
                     2325                      2330                      2335  
 Pro Gly Val Ala Met Pro Asn Leu Tyr Lys Met Gln Arg Met Leu Leu  
                     2340                      2345                      2350  
 Glu Lys Cys Asp Leu Gln Asn Tyr Gly Glu Asn Ala Val Ile Pro Lys  
                     2355                      2360                      2365  
 Gly Ile Met Met Asn Val Ala Lys Tyr Thr Gln Leu Cys Gln Tyr Leu  
                     2370                      2375                      2380  
 Asn Thr Leu Thr Leu Ala Val Pro Tyr Asn Met Arg Val Ile His Phe  
 2385                      2390                      2395                      2400  
 Gly Ala Gly Ser Asp Lys Gly Val Ala Pro Gly Thr Ala Val Leu Arg  
                     2405                      2410                      2415  
 Gln Trp Leu Pro Thr Gly Thr Leu Leu Val Asp Ser Asp Leu Asn Asp  
                     2420                      2425                      2430  
 Phe Val Ser Asp Ala Tyr Ser Thr Leu Ile Gly Asp Cys Ala Thr Val  
                     2435                      2440                      2445  
 His Thr Ala Asn Lys Trp Asp Leu Ile Ile Ser Asp Met Tyr Asp Pro  
                     2450                      2455                      2460  
 Arg Thr Lys His Val Thr Lys Glu Asn Asp Ser Lys Glu Gly Phe Phe  
 2465                      2470                      2475                      2480  
 Thr Tyr Leu Cys Gly Phe Ile Lys Gln Lys Leu Ala Leu Gly Gly Ser  
                     2485                      2490                      2495  
 Ile Ala Val Lys Ile Thr Glu His Ser Trp Asn Ala Asp Leu Tyr Lys  
                     2500                      2505                      2510  
 Leu Met Gly His Phe Ser Trp Trp Thr Ala Phe Val Thr Asn Val Asn  
                     2515                      2520                      2525  
 Ala Ser Ser Ser Glu Ala Phe Leu Ile Gly Ala Asn Tyr Leu Gly Lys  
                     2530                      2535                      2540  
 Pro Lys Glu Gln Ile Asp Gly Tyr Thr Met His Ala Asn Tyr Ile Phe  
 2545                      2550                      2555                      2560  
 Trp Arg Asn Thr Asn Pro Ile Gln Leu Ser Ser Tyr Ser Leu Phe Asp  
                     2565                      2570                      2575  
 Met Ser Lys Phe Pro Leu Lys Leu Arg Gly Thr Ala Val Met Ser Leu  
                     2580                      2585                      2590  
 Lys Glu Asn Gln Ile Asn Asp Met Ile Tyr Ser Leu Leu Glu Lys Gly  
                     2595                      2600                      2605  
 Arg Leu Ile Ile Arg Glu Asn Asn Arg Val Val Val Ser Ser Asp Ile

2610

2615

Leu Val Asn Asn  
2625

<210> 6042  
<211> 1255  
<212> PRT  
<213> SARS coronavirus

<400> 6042  
Met Phe Ile Phe Leu Phe Leu Thr Leu Thr Ser Gly Ser Asp Leu  
1 5 10 15  
Asp Arg Cys Thr Thr Phe Asp Asp Val Gln Ala Pro Asn Tyr Thr Gln  
20 25 30  
His Thr Ser Ser Met Arg Gly Val Tyr Tyr Pro Asp Glu Ile Phe Arg  
35 40 45  
Ser Asp Thr Leu Tyr Leu Thr Gln Asp Leu Phe Leu Pro Phe Tyr Ser  
50 55 60  
Asn Val Thr Gly Phe His Thr Ile Asn His Thr Phe Gly Asn Pro Val  
65 70 75 80  
Ile Pro Phe Lys Asp Gly Ile Tyr Phe Ala Ala Thr Glu Lys Ser Asn  
85 90 95  
Val Val Arg Gly Trp Val Phe Gly Ser Thr Met Asn Asn Lys Ser Gln  
100 105 110  
Ser Val Ile Ile Ile Asn Asn Ser Thr Asn Val Val Ile Arg Ala Cys  
115 120 125  
Asn Phe Glu Leu Cys Asp Asn Pro Phe Phe Ala Val Ser Lys Pro Met  
130 135 140  
Gly Thr Gln Thr His Thr Met Ile Phe Asp Asn Ala Phe Asn Cys Thr  
145 150 155 160  
Phe Glu Tyr Ile Ser Asp Ala Phe Ser Leu Asp Val Ser Glu Lys Ser  
165 170 175  
Gly Asn Phe Lys His Leu Arg Glu Phe Val Phe Lys Asn Lys Asp Gly  
180 185 190  
Phe Leu Tyr Val Tyr Lys Gly Tyr Gln Pro Ile Asp Val Val Arg Asp  
195 200 205  
Leu Pro Ser Gly Phe Asn Thr Leu Lys Pro Ile Phe Lys Leu Pro Leu  
210 215 220  
Gly Ile Asn Ile Thr Asn Phe Arg Ala Ile Leu Thr Ala Phe Ser Pro  
225 230 235 240  
Ala Gln Asp Ile Trp Gly Thr Ser Ala Ala Ala Tyr Phe Val Gly Tyr  
245 250 255  
Leu Lys Pro Thr Thr Phe Met Leu Lys Tyr Asp Glu Asn Gly Thr Ile  
260 265 270  
Thr Asp Ala Val Asp Cys Ser Gln Asn Pro Leu Ala Glu Leu Lys Cys

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275	280	285
Ser Val Lys Ser Phe Glu Ile Asp Lys Gly Ile Tyr Gln Thr Ser Asn		
290	295	300
Phe Arg Val Val Pro Ser Gly Asp Val Val Arg Phe Pro Asn Ile Thr		
305	310	315
Asn Leu Cys Pro Phe Gly Glu Val Phe Asn Ala Thr Lys Phe Pro Ser		
	325	330
Val Tyr Ala Trp Glu Arg Lys Lys Ile Ser Asn Cys Val Ala Asp Tyr		
	340	345
Ser Val Leu Tyr Asn Ser Thr Phe Phe Ser Thr Phe Lys Cys Tyr Gly		
	355	360
Val Ser Ala Thr Lys Leu Asn Asp Leu Cys Phe Ser Asn Val Tyr Ala		
	370	375
Asp Ser Phe Val Val Lys Gly Asp Asp Val Arg Gln Ile Ala Pro Gly		
385	390	395
Gln Thr Gly Val Ile Ala Asp Tyr Asn Tyr Lys Leu Pro Asp Asp Phe		
	405	410
Met Gly Cys Val Leu Ala Trp Asn Thr Arg Asn Ile Asp Ala Thr Ser		
	420	425
Thr Gly Asn Tyr Asn Tyr Lys Tyr Arg Tyr Leu Arg His Gly Lys Leu		
	435	440
Arg Pro Phe Glu Arg Asp Ile Ser Asn Val Pro Phe Ser Pro Asp Gly		
	450	455
Lys Pro Cys Thr Pro Pro Ala Leu Asn Cys Tyr Trp Pro Leu Asn Asp		
465	470	475
Tyr Gly Phe Tyr Thr Thr Thr Gly Ile Gly Tyr Gln Pro Tyr Arg Val		
	485	490
Val Val Leu Ser Phe Glu Leu Leu Asn Ala Pro Ala Thr Val Cys Gly		
	500	505
Pro Lys Leu Ser Thr Asp Leu Ile Lys Asn Gln Cys Val Asn Phe Asn		
	515	520
Phe Asn Gly Leu Thr Gly Thr Gly Val Leu Thr Pro Ser Ser Lys Arg		
	530	535
Phe Gln Pro Phe Gln Gln Phe Gly Arg Asp Val Ser Asp Phe Thr Asp		
545	550	555
Ser Val Arg Asp Pro Lys Thr Ser Glu Ile Leu Asp Ile Ser Pro Cys		
	565	570
Ala Phe Gly Gly Val Ser Val Ile Thr Pro Gly Thr Asn Ala Ser Ser		
	580	585
Glu Val Ala Val Leu Tyr Gln Asp Val Asn Cys Thr Asp Val Ser Thr		
	595	600
Ala Ile His Ala Asp Gln Leu Thr Pro Ala Trp Arg Ile Tyr Ser Thr		

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610		615		620
Gly 625	Asn	Asn	Val	Phe
		Gln 630	Thr	Gln
			Ala	Gly
			Cys 635	Leu
			Ile	Gly
			Ala	Glu 640
His	Val	Asp	Thr	Ser 645
			Tyr	Glu
			Cys	Asp
			Ile 650	Pro
			Ile	Gly
			Ala	Gly 655
Cys	Ala	Ser	Tyr 660	His
			Thr	Val
			Ser	Leu 665
			Arg	Ser
			Thr	Ser 670
			Gln	Lys
Ser	Ile	Val 675	Ala	Tyr
			Thr	Met
			Ser 680	Leu
			Gly	Ala
			Asp	Ser 685
			Ser	Ile
			Ala	
Tyr	Ser 690	Asn	Asn	Thr
			Ile	Ala 695
			Ile	Pro
			Thr	Asn
			Phe 700	Ser
			Ile	Ser
			Ile	
Thr 705	Thr	Glu	Val	Met
			Pro 710	Val
			Ser	Met
			Ala	Lys 715
			Thr	Ser
			Val	Asp
			Cys	
Asn	Met	Tyr	Ile	Cys 725
			Gly	Asp
			Ser	Thr
			Glu 730	Cys
			Ala	Asn
			Leu	Leu 735
			Leu	
Gln	Tyr	Gly	Ser 740	Phe
			Cys	Thr
			Gln	Leu 745
			Asn	Arg
			Ala	Leu
			Ser 750	Gly
			Ile	
Ala	Ala	Glu 755	Gln	Asp
			Arg	Asn
			Thr 760	Arg
			Glu	Val
			Phe	Ala 765
			Gln	Val
			Lys	
Gln	Met 770	Tyr	Lys	Thr
			Pro	Thr 775
			Leu	Lys
			Tyr	Phe
			Gly 780	Gly
			Phe	Asn
			Phe	
Ser 785	Gln	Ile	Leu	Pro
			Asp 790	Pro
			Leu	Lys
			Pro	Thr 795
			Lys	Arg
			Ser	Phe
			Ile	
Glu	Asp	Leu	Leu	Phe 805
			Asn	Lys
			Val	Thr
			Leu 810	Ala
			Asp	Ala
			Gly	Phe 815
			Met	
Lys	Gln	Tyr	Gly 820	Glu
			Cys	Leu
			Gly	Asp 825
			Ile	Asn
			Ala	Arg
			Asp 830	Leu
			Ile	
Cys	Ala	Gln 835	Lys	Phe
			Asn	Gly
			Leu	Thr 840
			Val	Leu
			Pro	Pro 845
			Leu	
			Leu	Thr
Asp	Asp 850	Met	Ile	Ala
			Ala	Tyr 855
			Thr	Ala
			Ala	Leu
			Val 860	Ser
			Gly	Thr
			Ala	
Thr 865	Ala	Gly	Trp	Thr
			Phe 870	Gly
			Ala	Gly
			Ala	Ala 875
			Leu	Gln
			Ile	Pro
			Phe 880	
Ala	Met	Gln	Met	Ala 885
			Tyr	Arg
			Phe	Asn
			Gly 890	Ile
			Gly	Val
			Thr	Gln 895
			Asn	
Val	Leu	Tyr	Glu 900	Asn
			Gln	Lys
			Gln	Ile 905
			Ala	Asn
			Gln	Phe
			Asn 910	Lys
			Ala	
Ile	Ser	Gln 915	Ile	Gln
			Glu	Ser
			Leu 920	Thr
			Thr	Thr
			Ser	Thr 925
			Ala	Leu
			Gly	
Lys	Leu	Gln	Asp	Val
			Val	Asn 935
			Gln	Asn
			Ala	Gln
			Ala 940	Leu
			Asn	Thr
			Leu	
Val	Lys	Gln	Leu	Ser
			Ser	Asn
			Phe	Gly
			Ala	Ile
			Ser	Ser
			Val	Leu
			Asn	

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945                950                955                960
Asp Ile Leu Ser Arg Leu Asp Lys Val Glu Ala Glu Val Gln Ile Asp
          965          970          975
Arg Leu Ile Thr Gly Arg Leu Gln Ser Leu Gln Thr Tyr Val Thr Gln
          980          985          990
Gln Leu Ile Arg Ala Ala Glu Ile Arg Ala Ser Ala Asn Leu Ala Ala
          995          1000          1005
Thr Lys Met Ser Glu Cys Val Leu Gly Gln Ser Lys Arg Val Asp Phe
          1010          1015          1020
Cys Gly Lys Gly Tyr His Leu Met Ser Phe Pro Gln Ala Ala Pro His
          1025          1030          1035          1040
Gly Val Val Phe Leu His Val Thr Tyr Val Pro Ser Gln Glu Arg Asn
          1045          1050          1055
Phe Thr Thr Ala Pro Ala Ile Cys His Glu Gly Lys Ala Tyr Phe Pro
          1060          1065          1070
Arg Glu Gly Val Phe Val Phe Asn Gly Thr Ser Trp Phe Ile Thr Gln
          1075          1080          1085
Arg Asn Phe Phe Ser Pro Gln Ile Ile Thr Thr Asp Asn Thr Phe Val
          1090          1095          1100
Ser Gly Asn Cys Asp Val Val Ile Gly Ile Ile Asn Asn Thr Val Tyr
          1105          1110          1115          1120
Asp Pro Leu Gln Pro Glu Leu Asp Ser Phe Lys Glu Glu Leu Asp Lys
          1125          1130          1135
Tyr Phe Lys Asn His Thr Ser Pro Asp Val Asp Leu Gly Asp Ile Ser
          1140          1145          1150
Gly Ile Asn Ala Ser Val Val Asn Ile Gln Lys Glu Ile Asp Arg Leu
          1155          1160          1165
Asn Glu Val Ala Lys Asn Leu Asn Glu Ser Leu Ile Asp Leu Gln Glu
          1170          1175          1180
Leu Gly Lys Tyr Glu Gln Tyr Ile Lys Trp Pro Trp Tyr Val Trp Leu
          1185          1190          1195          1200
Gly Phe Ile Ala Gly Leu Ile Ala Ile Val Met Val Thr Ile Leu Leu
          1205          1210          1215
Cys Cys Met Thr Ser Cys Cys Ser Cys Leu Lys Gly Ala Cys Ser Cys
          1220          1225          1230
Gly Ser Cys Cys Lys Phe Asp Glu Asp Asp Ser Glu Pro Val Leu Lys
          1235          1240          1245
Gly Val Lys Leu His Tyr Thr
          1250          1255

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<210> 6043
<211> 274
<212> PRT
<213> SARS coronavirus

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SEQLIST-20480.TXT

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<400> 6043
Met Asp Leu Phe Met Arg Phe Phe Thr Leu Gly Ser Ile Thr Ala Gln
1      5      10      15
Pro Val Lys Ile Asp Asn Ala Ser Pro Ala Ser Thr Val His Ala Thr
      20      25      30
Ala Thr Ile Pro Leu Gln Ala Ser Leu Pro Phe Gly Trp Leu Val Ile
      35      40      45
Gly Val Ala Phe Leu Ala Val Phe Gln Ser Ala Thr Lys Ile Ile Ala
      50      55      60
Leu Asn Lys Arg Trp Gln Leu Ala Leu Tyr Lys Gly Phe Gln Phe Ile
      65      70      75      80
Cys Asn Leu Leu Leu Leu Phe Val Thr Ile Tyr Ser His Leu Leu Leu
      85      90      95
Val Ala Ala Gly Met Glu Ala Gln Phe Leu Tyr Leu Tyr Ala Leu Ile
      100      105      110
Tyr Phe Leu Gln Cys Ile Asn Ala Cys Arg Ile Ile Met Arg Cys Trp
      115      120      125
Leu Cys Trp Lys Cys Lys Ser Lys Asn Pro Leu Leu Tyr Asp Ala Asn
      130      135      140
Tyr Phe Val Cys Trp His Thr His Asn Tyr Asp Tyr Cys Ile Pro Tyr
      145      150      155      160
Asn Ser Val Thr Asp Thr Ile Val Val Thr Glu Gly Asp Gly Ile Ser
      165      170      175
Thr Pro Lys Leu Lys Glu Asp Tyr Gln Ile Gly Gly Tyr Ser Glu Asp
      180      185      190
Arg His Ser Gly Val Lys Asp Tyr Val Val Val His Gly Tyr Phe Thr
      195      200      205
Glu Val Tyr Tyr Gln Leu Glu Ser Thr Gln Ile Thr Thr Asp Thr Gly
      210      215      220
Ile Glu Asn Ala Thr Phe Phe Ile Phe Asn Lys Leu Val Lys Asp Pro
      225      230      235      240
Pro Asn Val Gln Ile His Thr Ile Asp Gly Ser Ser Gly Val Ala Asn
      245      250      255
Pro Ala Met Asp Pro Ile Tyr Asp Glu Pro Thr Thr Thr Thr Ser Val
      260      265      270
Pro Leu

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<210> 6044
<211> 154
<212> PRT
<213> SARS coronavirus

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<400> 6044
Met Met Pro Thr Thr Leu Phe Ala Gly Thr His Ile Thr Met Thr Thr
Page 1100

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1 5 10 15  
 Val Tyr His Ile Thr Val Ser Gln Ile Gln Leu Ser Leu Leu Lys Val  
 20 25 30  
 Thr Ala Phe Gln His Gln Asn Ser Lys Lys Thr Thr Lys Leu Val Val  
 35 40 45  
 Ile Leu Arg Ile Gly Thr Gln Val Leu Lys Thr Met Ser Leu Tyr Met  
 50 55 60  
 Ala Ile Ser Pro Lys Phe Thr Thr Ser Leu Ser Leu His Lys Leu Leu  
 65 70 75 80  
 Gln Thr Leu Val Leu Lys Met Leu His Ser Ser Ser Leu Thr Ser Leu  
 85 90 95  
 Leu Lys Thr His Arg Met Cys Lys Tyr Thr Gln Ser Thr Ala Leu Gln  
 100 105 110  
 Glu Leu Leu Ile Gln Gln Trp Ile Gln Phe Met Met Ser Arg Arg Arg  
 115 120 125  
 Leu Leu Ala Cys Leu Cys Lys His Lys Lys Val Ser Thr Asn Leu Cys  
 130 135 140  
 Thr His Ser Phe Arg Lys Lys Gln Val Arg  
 145 150

<210> 6045  
 <211> 76  
 <212> PRT  
 <213> SARS coronavirus

<400> 6045  
 Met Tyr Ser Phe Val Ser Glu Glu Thr Gly Thr Leu Ile Val Asn Ser  
 1 5 10 15  
 Val Leu Leu Phe Leu Ala Phe Val Val Phe Leu Leu Val Thr Leu Ala  
 20 25 30  
 Ile Leu Thr Ala Leu Arg Leu Cys Ala Tyr Cys Cys Asn Ile Val Asn  
 35 40 45  
 Val Ser Leu Val Lys Pro Thr Val Tyr Val Tyr Ser Arg Val Lys Asn  
 50 55 60  
 Leu Asn Ser Ser Glu Gly Val Pro Asp Leu Leu Val  
 65 70 75

<210> 6046  
 <211> 221  
 <212> PRT  
 <213> SARS coronavirus

<400> 6046  
 Met Ala Asp Asn Gly Thr Ile Thr Val Glu Glu Leu Lys Gln Leu Leu  
 1 5 10 15  
 Glu Gln Trp Asn Leu Val Ile Gly Phe Leu Phe Leu Ala Trp Ile Met  
 20 25 30  
 Leu Leu Gln Phe Ala Tyr Ser Asn Arg Asn Arg Phe Leu Tyr Ile Ile

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35

40

45

Lys Leu Val Phe Leu Trp Leu Leu Trp Pro Val Thr Leu Ala Cys Phe  
50 55 60  
Val Leu Ala Ala Val Tyr Arg Ile Asn Trp Val Thr Gly Gly Ile Ala  
65 70 75 80  
Ile Ala Met Ala Cys Ile Val Gly Leu Met Trp Leu Ser Tyr Phe Val  
85 90 95  
Ala Ser Phe Arg Leu Phe Ala Arg Thr Arg Ser Met Trp Ser Phe Asn  
100 105 110  
Pro Glu Thr Asn Ile Leu Leu Asn Val Pro Leu Arg Gly Thr Ile Val  
115 120 125  
Thr Arg Pro Leu Met Glu Ser Glu Leu Val Ile Gly Ala Val Ile Ile  
130 135 140  
Arg Gly His Leu Arg Met Ala Gly His Ser Leu Gly Arg Cys Asp Ile  
145 150 155 160  
Lys Asp Leu Pro Lys Glu Ile Thr Val Ala Thr Ser Arg Thr Leu Ser  
165 170 175  
Tyr Tyr Lys Leu Gly Ala Ser Gln Arg Val Gly Thr Asp Ser Gly Phe  
180 185 190  
Ala Ala Tyr Asn Arg Tyr Arg Ile Gly Asn Tyr Lys Leu Asn Thr Asp  
195 200 205  
His Ala Gly Ser Asn Asp Asn Ile Ala Leu Leu Val Gln  
210 215 220

<210> 6047  
<211> 63  
<212> PRT  
<213> SARS coronavirus

<400> 6047  
Met Phe His Leu Val Asp Phe Gln Val Thr Ile Ala Glu Ile Leu Ile  
1 5 10 15  
Ile Ile Met Arg Thr Phe Arg Ile Ala Ile Trp Asn Leu Asp Val Ile  
20 25 30  
Ile Ser Ser Ile Val Arg Gln Leu Phe Lys Pro Leu Thr Lys Lys Asn  
35 40 45  
Tyr Ser Glu Leu Asp Asp Glu Glu Pro Met Glu Leu Asp Tyr Pro  
50 55 60

<210> 6048  
<211> 122  
<212> PRT  
<213> SARS coronavirus

<400> 6048  
Met Lys Ile Ile Leu Phe Leu Thr Leu Ile Val Phe Thr Ser Cys Glu  
1 5 10 15  
Leu Tyr His Tyr Gln Glu Cys Val Arg Gly Thr Thr Val Leu Leu Lys

SEQLIST-20480.TXT

20 25 30  
 Glu Pro Cys Pro Ser Gly Thr Tyr Glu Gly Asn Ser Pro Phe His Pro  
           35                  40                  45  
 Leu Ala Asp Asn Lys Phe Ala Leu Thr Cys Thr Ser Thr His Phe Ala  
       50                  55                  60  
 Phe Ala Cys Ala Asp Gly Thr Arg His Thr Tyr Gln Leu Arg Ala Arg  
 65                  70                  75                  80  
 Ser Val Ser Pro Lys Leu Phe Ile Arg Gln Glu Glu Val Gln Gln Glu  
                   85                  90                  95  
 Leu Tyr Ser Pro Leu Phe Leu Ile Val Ala Ala Leu Val Phe Leu Ile  
                  100                 105                 110  
 Leu Cys Phe Thr Ile Lys Arg Lys Thr Glu  
          115                 120

<210> 6049  
 <211> 44  
 <212> PRT  
 <213> SARS coronavirus

<400> 6049  
 Met Asn Glu Leu Thr Leu Ile Asp Phe Tyr Leu Cys Phe Leu Ala Phe  
 1                  5                  10                  15  
 Leu Leu Phe Leu Val Leu Ile Met Leu Ile Ile Phe Trp Phe Ser Leu  
                  20                 25                 30  
 Glu Ile Gln Asp Leu Glu Glu Pro Cys Thr Lys Val  
          35                 40

<210> 6050  
 <211> 84  
 <212> PRT  
 <213> SARS coronavirus

<400> 6050  
 Met Cys Leu Lys Ile Leu Val Arg Tyr Asn Thr Arg Gly Asn Thr Tyr  
 1                  5                  10                  15  
 Ser Thr Ala Trp Leu Cys Ala Leu Gly Lys Val Leu Pro Phe His Arg  
                  20                 25                 30  
 Trp His Thr Met Val Gln Thr Cys Thr Pro Asn Val Thr Ile Asn Cys  
          35                 40                 45  
 Gln Asp Pro Ala Gly Gly Ala Leu Ile Ala Arg Cys Trp Tyr Leu His  
       50                 55                 60  
 Glu Gly His Gln Thr Ala Ala Phe Arg Asp Val Leu Val Val Leu Asn  
 65                 70                 75                 80  
 Lys Arg Thr Asn

<210> 6051  
 <211> 399  
 <212> PRT  
 <213> SARS coronavirus

SEQLIST-20480.TXT

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<400> 6051
Met Ser Asp Asn Gly Pro Gln Ser Asn Gln Arg Ser Ala Pro Arg Ile
1      5      10      15
Thr Phe Gly Gly Pro Thr Asp Ser Thr Asp Asn Asn Gln Asn Gly Gly
20      25      30
Arg Asn Gly Ala Arg Pro Lys Gln Arg Arg Pro Gln Gly Leu Pro Asn
35      40      45
Asn Thr Ala Ser Trp Phe Thr Ala Leu Thr Gln His Gly Lys Glu Glu
50      55      60
Leu Arg Phe Pro Arg Gly Gln Gly Val Pro Ile Asn Thr Asn Ser Gly
65      70      75      80
Pro Asp Asp Gln Ile Gly Tyr Tyr Arg Arg Ala Thr Arg Arg Val Arg
85      90      95
Gly Gly Asp Gly Lys Met Lys Glu Leu Ser Pro Arg Trp Tyr Phe Tyr
100     105
Tyr Leu Gly Thr Gly Pro Glu Ala Ser Leu Pro Tyr Gly Ala Asn Lys
115     120     125
Glu Gly Ile Val Trp Val Ala Thr Glu Gly Ala Leu Asn Thr Pro Lys
130     135     140
Asp His Ile Gly Thr Arg Asn Pro Asn Asn Asn Ala Ala Thr Val Leu
145     150     155     160
Gln Leu Pro Gln Gly Thr Thr Leu Pro Lys Gly Phe Tyr Ala Glu Gly
165     170     175
Ser Arg Gly Gly Ser Gln Ala Ser Ser Arg Ser Ser Ser Arg Ser Arg
180     185     190
Gly Asn Ser Arg Asn Ser Thr Pro Gly Ser Ser Arg Gly Asn Ser Pro
195     200     205
Ala Arg Met Ala Ser Gly Gly Gly Glu Thr Ala Leu Ala Leu Leu Leu
210     215     220
Leu Asp Arg Leu Asn Gln Leu Glu Ser Lys Val Ser Gly Lys Gly Gln
225     230     235     240
Gln Gln Gln Gly Gln Thr Val Thr Lys Lys Ser Ala Ala Glu Ala Ser
245     250     255
Lys Lys Pro Arg Gln Lys Arg Thr Ala Thr Lys Gln Tyr Asn Val Thr
260     265     270
Gln Ala Phe Gly Arg Arg Gly Pro Glu Gln Thr Gln Gly Asn Phe Gly
275     280     285
Asp Gln Asp Leu Ile Arg Gln Gly Thr Asp Tyr Lys His Trp Pro Gln
290     295     300
Ile Ala Gln Phe Ala Pro Ser Ala Ser Ala Phe Phe Gly Met Ser Arg
305     310     315     320
Ile Gly Met Glu Val Thr Pro Ser Gly Thr Trp Leu Thr Tyr His Gly

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325

330

335

Ala Ile Lys Leu Asp Asp Lys Asp Pro Gln Phe Lys Asp Asn Val Ile  
 340 345 350  
 Leu Leu Asn Lys His Ile Asp Ala Tyr Lys Thr Phe Pro Pro Thr Glu  
 355 360 365  
 Pro Lys Lys Asp Lys Lys Lys Lys Thr Asp Glu Ala Gln Pro Leu Pro  
 370 375 380  
 Gln Arg Gln Lys Lys Gln Pro Thr Val Thr Leu Leu Pro Ala Ala  
 385 390 395

<210> 6052  
 <211> 422  
 <212> PRT  
 <213> SARS coronavirus

<400> 6052  
 Met Ser Asp Asn Gly Pro Gln Ser Asn Gln Arg Ser Ala Pro Arg Ile  
 1 5 10 15  
 Thr Phe Gly Gly Pro Thr Asp Ser Thr Asp Asn Asn Gln Asn Gly Gly  
 20 25 30  
 Arg Asn Gly Ala Arg Pro Lys Gln Arg Arg Pro Gln Gly Leu Pro Asn  
 35 40 45  
 Asn Thr Ala Ser Trp Phe Thr Ala Leu Thr Gln His Gly Lys Glu Glu  
 50 55 60  
 Leu Arg Phe Pro Arg Gly Gln Gly Val Pro Ile Asn Thr Asn Ser Gly  
 65 70 75 80  
 Pro Asp Asp Gln Ile Gly Tyr Tyr Arg Arg Ala Thr Arg Arg Val Arg  
 85 90 95  
 Gly Gly Asp Gly Lys Met Lys Glu Leu Ser Pro Arg Trp Tyr Phe Tyr  
 100 105 110  
 Tyr Leu Gly Thr Gly Pro Glu Ala Ser Leu Pro Tyr Gly Ala Asn Lys  
 115 120 125  
 Glu Gly Ile Val Trp Val Ala Thr Glu Gly Ala Leu Asn Thr Pro Lys  
 130 135 140  
 Asp His Ile Gly Thr Arg Asn Pro Asn Asn Asn Ala Ala Thr Val Leu  
 145 150 155 160  
 Gln Leu Pro Gln Gly Thr Thr Leu Pro Lys Gly Phe Tyr Ala Glu Gly  
 165 170 175  
 Ser Arg Gly Gly Ser Gln Ala Ser Ser Arg Ser Ser Ser Arg Ser Arg  
 180 185 190  
 Gly Asn Ser Arg Asn Ser Thr Pro Gly Ser Ser Arg Gly Asn Ser Pro  
 195 200 205  
 Ala Arg Met Ala Ser Gly Gly Gly Glu Thr Ala Leu Ala Leu Leu Leu  
 210 215 220  
 Leu Asp Arg Leu Asn Gln Leu Glu Ser Lys Val Ser Gly Lys Gly Gln

SEQLIST-20480.TXT															
225				230				235				240			
Gln	Gln	Gln	Gly	Gln	Thr	Val	Thr	Lys	Lys	Ser	Ala	Ala	Glu	Ala	Ser
				245					250					255	
Lys	Lys	Pro	Arg	Gln	Lys	Arg	Thr	Ala	Thr	Lys	Gln	Tyr	Asn	Val	Thr
			260					265					270		
Gln	Ala	Phe	Gly	Arg	Arg	Gly	Pro	Glu	Gln	Thr	Gln	Gly	Asn	Phe	Gly
		275					280					285			
Asp	Gln	Asp	Leu	Ile	Arg	Gln	Gly	Thr	Asp	Tyr	Lys	His	Trp	Pro	Gln
	290					295					300				
Ile	Ala	Gln	Phe	Ala	Pro	Ser	Ala	Ser	Ala	Phe	Phe	Gly	Met	Ser	Arg
305					310					315					320
Ile	Gly	Met	Glu	Val	Thr	Pro	Ser	Gly	Thr	Trp	Leu	Thr	Tyr	His	Gly
				325					330					335	
Ala	Ile	Lys	Leu	Asp	Asp	Lys	Asp	Pro	Gln	Phe	Lys	Asp	Asn	Val	Ile
			340					345					350		
Leu	Leu	Asn	Lys	His	Ile	Asp	Ala	Tyr	Lys	Thr	Phe	Pro	Pro	Thr	Glu
		355					360					365			
Pro	Lys	Lys	Asp	Lys	Lys	Lys	Lys	Thr	Asp	Glu	Ala	Gln	Pro	Leu	Pro
	370					375					380				
Gln	Arg	Gln	Lys	Lys	Gln	Pro	Thr	Val	Thr	Leu	Leu	Pro	Ala	Ala	Asp
385					390					395					400
Met	Asp	Asp	Phe	Ser	Arg	Gln	Leu	Gln	Asn	Ser	Met	Ser	Gly	Ala	Ser
				405					410					415	
Ala	Asp	Ser	Thr	Gln	Ala										
			420												

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<210> 6053
<211> 1173
<212> PRT
<213> 229E human coronavirus
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<400>	6053														
Met	Phe	Val	Leu	Leu	Val	Ala	Tyr	Ala	Leu	Leu	His	Ile	Ala	Gly	Cys
1				5					10					15	
Gln	Thr	Thr	Asn	Gly	Leu	Asn	Thr	Ser	Tyr	Ser	Val	Cys	Asn	Gly	Cys
			20					25					30		
Val	Gly	Tyr	Ser	Glu	Asn	Val	Phe	Ala	Val	Glu	Ser	Gly	Gly	Tyr	Ile
		35					40					45			
Pro	Ser	Asp	Phe	Ala	Phe	Asn	Asn	Trp	Phe	Leu	Leu	Thr	Asn	Thr	Ser
	50					55					60				
Ser	Val	Val	Asp	Gly	Val	Val	Arg	Ser	Phe	Gln	Pro	Leu	Leu	Leu	Asn
65					70					75					80
Cys	Leu	Trp	Ser	Val	Ser	Gly	Leu	Arg	Phe	Thr	Thr	Gly	Phe	Val	Tyr
				85					90					95	
Phe	Asn	Gly	Thr	Gly	Arg	Gly	Asp	Cys	Lys	Gly	Phe	Ser	Ser	Asp	Val

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435		440		445	
Tyr Asn Ile Tyr Asp Val Ser Gly Val Gly Val Ile Arg Val Ser Asn	450	455	460		
Asp Thr Phe Leu Asn Gly Ile Thr Tyr Thr Ser Thr Ser Gly Asn Leu	465	470	475		480
Leu Gly Phe Lys Asp Val Thr Lys Gly Thr Ile Tyr Ser Ile Thr Pro	485	490		495	
Cys Asn Pro Pro Asp Gln Leu Val Val Tyr Gln Gln Ala Val Val Gly	500	505		510	
Ala Met Leu Ser Glu Asn Phe Thr Ser Tyr Gly Phe Ser Asn Val Val	515	520	525		
Glu Leu Pro Lys Phe Phe Tyr Ala Ser Asn Gly Thr Tyr Asn Cys Thr	530	535	540		
Asp Ala Val Leu Thr Tyr Ser Ser Phe Gly Val Cys Ala Asp Gly Ser	545	550	555		560
Ile Ile Ala Val Gln Pro Arg Asn Val Ser Tyr Asp Ser Val Ser Ala	565	570		575	
Ile Val Thr Ala Asn Leu Ser Ile Pro Ser Asn Trp Thr Thr Ser Val	580	585	590		
Gln Val Glu Tyr Leu Gln Ile Thr Ser Thr Pro Ile Val Val Asp Cys	595	600	605		
Ser Thr Tyr Val Cys Asn Gly Asn Val Arg Cys Val Glu Leu Leu Lys	610	615	620		
Gln Tyr Thr Ser Ala Cys Lys Thr Ile Glu Asp Ala Leu Arg Asn Ser	625	630	635		640
Ala Arg Leu Glu Ser Ala Asp Val Ser Glu Met Leu Thr Phe Asp Lys	645	650	655		
Lys Ala Phe Thr Leu Ala Asn Val Ser Ser Phe Gly Asp Tyr Asn Leu	660	665	670		
Ser Ser Val Ile Pro Ser Leu Pro Thr Ser Gly Ser Arg Val Ala Gly	675	680	685		
Arg Ser Ala Ile Glu Asp Ile Leu Phe Ser Lys Leu Val Thr Ser Gly	690	695	700		
Leu Gly Thr Val Asp Ala Asp Tyr Lys Lys Cys Thr Lys Gly Leu Ser	705	710	715		720
Ile Ala Asp Leu Ala Cys Ala Gln Tyr Tyr Asn Gly Ile Met Val Leu	725	730		735	
Pro Gly Val Ala Asp Ala Glu Arg Met Ala Met Tyr Thr Gly Ser Leu	740	745	750		
Ile Gly Gly Ile Ala Leu Gly Gly Leu Thr Ser Ala Val Ser Ile Pro	755	760	765		
Phe Ser Leu Ala Ile Gln Ala Arg Leu Asn Tyr Val Ala Leu Gln Thr					



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770 775 780  
 Asp Val Leu Gln Glu Asn Gln Lys Ile Leu Ala Ala Ser Phe Asn Lys  
 785 790 795 800  
 Ala Met Thr Asn Ile Val Asp Ala Phe Thr Gly Val Asn Asp Ala Ile  
 805 810 815  
 Thr Gln Thr Ser Gln Ala Leu Gln Thr Val Ala Thr Ala Leu Asn Lys  
 820 825 830  
 Ile Gln Asp Val Val Asn Gln Gln Gly Asn Ser Leu Asn His Leu Thr  
 835 840 845  
 Ser Gln Leu Arg Gln Asn Phe Gln Ala Ile Ser Ser Ser Ile Gln Ala  
 850 855 860  
 Ile Tyr Asp Arg Leu Asp Thr Ile Gln Ala Asp Gln Gln Val Asp Arg  
 865 870 875 880  
 Leu Ile Thr Gly Arg Leu Ala Ala Leu Asn Val Phe Val Ser His Thr  
 885 890 895  
 Leu Thr Lys Tyr Thr Glu Val Arg Ala Ser Arg Gln Leu Ala Gln Gln  
 900 905 910  
 Lys Val Asn Glu Cys Val Lys Ser Gln Ser Lys Arg Tyr Gly Phe Cys  
 915 920 925  
 Gly Asn Gly Thr His Ile Phe Ser Ile Val Asn Ala Ala Pro Glu Gly  
 930 935 940  
 Leu Val Phe Leu His Thr Val Leu Leu Pro Thr Gln Tyr Lys Asp Val  
 945 950 955 960  
 Glu Ala Trp Ser Gly Leu Cys Val Asp Gly Thr Asn Gly Tyr Val Leu  
 965 970 975  
 Arg Gln Pro Asn Leu Ala Leu Tyr Lys Glu Gly Asn Tyr Tyr Arg Ile  
 980 985 990  
 Thr Ser Arg Ile Met Phe Glu Pro Arg Ile Pro Thr Met Ala Asp Phe  
 995 1000 1005  
 Val Gln Ile Glu Asn Cys Asn Val Thr Phe Val Asn Ile Ser Arg Ser  
 1010 1015 1020  
 Glu Leu Gln Thr Ile Val Pro Glu Tyr Ile Asp Val Asn Lys Thr Leu  
 1025 1030 1035 1040  
 Gln Glu Leu Ser Tyr Lys Leu Pro Asn Tyr Thr Val Pro Asp Leu Val  
 1045 1050 1055  
 Val Glu Gln Tyr Asn Gln Thr Ile Leu Asn Leu Thr Ser Glu Ile Ser  
 1060 1065 1070  
 Thr Leu Glu Asn Lys Ser Ala Glu Leu Asn Tyr Thr Val Gln Lys Leu  
 1075 1080 1085  
 Gln Thr Leu Ile Asp Asn Ile Asn Ser Thr Leu Val Asp Leu Lys Trp  
 1090 1095 1100  
 Leu Asn Arg Val Glu Thr Tyr Ile Lys Trp Pro Trp Trp Val Trp Leu

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1105                      1110                      1115                      1120  
 Cys Ile Ser Val Val Leu Ile Phe Val Val Ser Met Leu Leu Leu Cys  
                                  1125                      1130                      1135  
 Cys Cys Ser Thr Gly Cys Cys Gly Phe Phe Ser Cys Phe Ala Ser Ser  
                                  1140                      1145                      1150  
 Ile Arg Gly Cys Cys Glu Ser Thr Lys Leu Pro Tyr Tyr Asp Val Glu  
                                  1155                      1160                      1165  
 Lys Ile His Ile Gln  
                                  1170

<210> 6054  
 <211> 77  
 <212> PRT  
 <213> 229E human coronavirus

<400> 6054  
 Met Phe Leu Lys Leu Val Asp Asp His Ala Leu Val Val Asn Val Leu  
 1                      5                      10                      15  
 Leu Trp Cys Val Val Leu Ile Val Ile Leu Leu Val Cys Ile Thr Ile  
                                  20                      25                      30  
 Ile Lys Leu Ile Lys Leu Cys Phe Thr Cys His Met Phe Cys Asn Arg  
                                  35                      40                      45  
 Thr Val Tyr Gly Pro Ile Lys Asn Val Tyr His Ile Tyr Gln Ser Tyr  
                                  50                      55                      60  
 Met His Ile Asp Pro Phe Pro Lys Arg Val Ile Asp Phe  
 65                      70                      75

<210> 6055  
 <211> 225  
 <212> PRT  
 <213> 229E human coronavirus

<400> 6055  
 Met Ser Asn Asp Asn Cys Thr Gly Asp Ile Val Thr His Leu Lys Asn  
 1                      5                      10                      15  
 Trp Asn Phe Gly Trp Asn Val Ile Leu Thr Ile Phe Ile Val Ile Leu  
                                  20                      25                      30  
 Gln Phe Gly His Tyr Lys Tyr Ser Arg Leu Phe Tyr Gly Leu Lys Met  
                                  35                      40                      45  
 Leu Val Leu Trp Leu Leu Trp Pro Leu Val Leu Ala Leu Ser Ile Phe  
                                  50                      55                      60  
 Asp Thr Trp Ala Asn Trp Asp Ser Asn Trp Ala Phe Val Ala Phe Ser  
 65                      70                      75                      80  
 Phe Phe Met Ala Val Ser Thr Leu Val Met Trp Val Met Tyr Phe Ala  
                                  85                      90                      95  
 Asn Ser Phe Arg Leu Phe Arg Arg Ala Arg Thr Phe Trp Ala Trp Asn  
                                  100                      105                      110  
 Pro Glu Val Asn Ala Ile Thr Val Thr Thr Val Leu Gly Gln Thr Tyr

SEQLIST-20480.TXT

115 120 125  
Tyr Gln Pro Ile Gln Gln Ala Pro Thr Gly Ile Thr Val Thr Leu Leu  
130 135 140  
Ser Gly Val Leu Tyr Val Asp Gly His Arg Leu Ala Ser Gly Val Gln  
145 150 155 160  
Val His Asn Leu Pro Glu Tyr Met Thr Val Ala Val Pro Ser Thr Thr  
165 170 175  
Ile Ile Tyr Ser Arg Val Gly Arg Ser Val Asn Ser Gln Asn Ser Thr  
180 185 190  
Gly Trp Val Phe Tyr Val Arg Val Lys His Gly Asp Phe Ser Ala Val  
195 200 205  
Ser Ser Pro Met Ser Asn Met Thr Glu Asn Glu Arg Leu Leu His Phe  
210 215 220

Phe  
225

<210> 6056  
<211> 389  
<212> PRT  
<213> 229E human coronavirus

<400> 6056  
Met Ala Thr Val Lys Trp Ala Asp Ala Ser Glu Pro Gln Arg Gly Arg  
1 5 10 15  
Gln Gly Arg Ile Pro Tyr Ser Leu Tyr Ser Pro Leu Leu Val Asp Ser  
20 25 30  
Glu Gln Pro Trp Lys Val Ile Pro Arg Asn Leu Val Pro Ile Asn Lys  
35 40 45  
Lys Asp Lys Asn Lys Leu Ile Gly Tyr Trp Asn Val Gln Lys Arg Phe  
50 55 60  
Arg Thr Arg Lys Gly Lys Arg Val Asp Leu Ser Pro Lys Leu His Phe  
65 70 75 80  
Tyr Tyr Leu Gly Thr Gly Pro His Lys Asp Ala Lys Phe Arg Glu Arg  
85 90 95  
Val Glu Gly Val Val Trp Val Ala Val Asp Gly Ala Lys Thr Glu Pro  
100 105 110  
Thr Gly Tyr Gly Val Arg Arg Lys Asn Ser Glu Pro Glu Ile Pro His  
115 120 125  
Phe Asn Gln Lys Leu Pro Asn Gly Val Thr Val Val Glu Glu Pro Asp  
130 135 140  
Ser Arg Ala Pro Ser Arg Ser Gln Ser Arg Ser Gln Ser Arg Gly Arg  
145 150 155 160  
Gly Glu Ser Lys Pro Gln Ser Arg Asn Pro Ser Ser Asp Arg Asn His  
165 170 175  
Asn Ser Gln Asp Asp Ile Met Lys Ala Val Ala Ala Ala Leu Lys Ser

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180 185 190  
 Leu Gly Phe Asp Lys Pro Gln Glu Lys Asp Lys Lys Ser Ala Lys Thr  
 195 200 205  
 Gly Thr Pro Lys Pro Ser Arg Asn Gln Ser Pro Ala Ser Ser Gln Thr  
 210 215 220  
 Ser Ala Lys Ser Leu Ala Arg Ser Gln Ser Ser Glu Thr Lys Glu Gln  
 225 230 235 240  
 Lys His Glu Met Gln Lys Pro Arg Trp Lys Arg Gln Pro Asn Asp Asp  
 245 250 255  
 Val Thr Ser Asn Val Thr Gln Cys Phe Gly Pro Arg Asp Leu Asp His  
 260 265 270  
 Asn Phe Gly Ser Ala Gly Val Val Ala Asn Gly Val Lys Ala Lys Gly  
 275 280 285  
 Tyr Pro Gln Phe Ala Glu Leu Val Pro Ser Thr Ala Ala Met Leu Phe  
 290 295 300  
 Asp Ser His Ile Val Ser Lys Glu Ser Gly Asn Thr Val Val Leu Thr  
 305 310 315 320  
 Phe Thr Thr Arg Val Thr Val Pro Lys Asp His Pro His Leu Gly Lys  
 325 330 335  
 Phe Leu Glu Glu Leu Asn Ala Phe Thr Arg Glu Met Gln Gln His Pro  
 340 345 350  
 Leu Leu Asn Pro Ser Ala Leu Glu Phe Asn Pro Ser Gln Thr Ser Pro  
 355 360 365  
 Ala Thr Ala Glu Pro Val Arg Asp Glu Val Ser Ile Glu Thr Asp Ile  
 370 375 380  
 Ile Asp Glu Val Asn  
 385

<210> 6057  
 <211> 1447  
 <212> PRT  
 <213> Transmissible gastroenteritis virus

<400> 6057

Met Lys Lys Leu Phe Val Val Leu Val Val Met Pro Leu Ile Tyr Gly  
 1 5 10 15  
 Asp Asn Phe Pro Cys Ser Lys Leu Thr Asn Arg Thr Ile Gly Asn Gln  
 20 25 30  
 Trp Asn Leu Ile Glu Thr Phe Leu Leu Asn Tyr Ser Ser Arg Leu Pro  
 35 40 45  
 Pro Asn Ser Asp Val Val Leu Gly Asp Tyr Phe Pro Thr Val Gln Pro  
 50 55 60  
 Trp Phe Asn Cys Ile Arg Asn Asp Ser Asn Asp Leu Tyr Val Thr Leu  
 65 70 75 80  
 Glu Asn Leu Lys Ala Leu Tyr Trp Asp Tyr Ala Thr Glu Asn Ile Thr

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85

90

95

Trp	Asn	His	Arg 100	Gln	Arg	Leu	Asn	Val 105	Val	Val	Asn	Gly	Tyr 110	Pro	Tyr
Ser	Ile	Thr 115	Val	Thr	Thr	Thr	Arg 120	Asn	Phe	Asn	Ser	Ala 125	Glu	Gly	Ala
Ile	Ile 130	Cys	Ile	Cys	Lys	Gly 135	Ser	Pro	Pro	Thr	Thr 140	Thr	Thr	Glu	Ser
Ser 145	Leu	Thr	Cys	Asn	Trp 150	Gly	Ser	Glu	Cys	Arg 155	Leu	Asn	His	Lys	Phe 160
Pro	Ile	Cys	Pro	Ser 165	Asn	Ser	Glu	Ala	Asn 170	Cys	Gly	Asn	Met	Leu 175	Tyr
Gly	Leu	Gln	Trp 180	Phe	Ala	Asp	Glu	Val 185	Val	Ala	Tyr	Leu	His 190	Gly	Ala
Ser	Tyr	Arg 195	Ile	Ser	Phe	Glu	Asn 200	Gln	Trp	Ser	Gly	Thr 205	Val	Thr	Phe
Gly	Asp 210	Met	Arg	Ala	Thr	Thr 215	Leu	Glu	Val	Ala	Gly 220	Thr	Leu	Val	Asp
Leu 225	Trp	Trp	Phe	Asn	Pro 230	Val	Tyr	Asp	Val	Ser 235	Tyr	Tyr	Arg	Val	Asn 240
Asn	Lys	Asn	Gly	Thr 245	Thr	Val	Val	Ser	Asn 250	Cys	Thr	Asp	Gln	Cys 255	Ala
Ser	Tyr	Val	Ala 260	Asn	Val	Phe	Thr	Thr 265	Gln	Pro	Gly	Gly	Phe 270	Ile	Pro
Ser	Asp	Phe 275	Ser	Phe	Asn	Asn	Trp 280	Phe	Leu	Leu	Thr	Asn 285	Ser	Ser	Thr
Leu	Val 290	Ser	Gly	Lys	Leu	Val 295	Thr	Lys	Gln	Pro	Leu 300	Leu	Val	Asn	Cys
Leu 305	Trp	Pro	Val	Pro	Ser 310	Phe	Glu	Glu	Ala	Ala 315	Ser	Thr	Phe	Cys	Phe 320
Glu	Gly	Ala	Gly	Phe 325	Asp	Gln	Cys	Asn	Gly 330	Ala	Val	Leu	Asn	Asn 335	Thr
Val	Asp	Val	Ile 340	Arg	Phe	Asn	Leu	Asn 345	Phe	Thr	Thr	Asn	Val 350	Gln	Ser
Gly	Lys	Gly 355	Ala	Thr	Val	Phe	Ser 360	Leu	Asn	Thr	Thr	Gly 365	Gly	Val	Thr
Leu	Glu 370	Ile	Ser	Cys	Tyr	Thr 375	Val	Ser	Asp	Ser	Ser 380	Phe	Phe	Ser	Tyr
Gly 385	Glu	Ile	Pro	Phe	Gly 390	Val	Thr	Asp	Gly	Pro 395	Arg	Tyr	Cys	Tyr	Val 400
His	Tyr	Asn	Gly	Thr 405	Ala	Leu	Lys	Tyr	Leu 410	Gly	Thr	Leu	Pro	Pro 415	Ser
Val	Lys	Glu	Ile	Ala	Ile	Ser	Lys	Trp	Gly	His	Phe	Tyr	Ile	Asn	Gly

420 425 430

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1090	1095	1100
Val Asn Ile Gln Gly Gln Ala Leu Ser His Leu Thr Val Gln Leu Gln 1105 1110 1115 1120		
Asn Asn Phe Gln Ala Ile Ser Ser Ser Ile Ser Asp Ile Tyr Asn Arg 1125 1130 1135		
Leu Asp Glu Leu Ser Ala Asp Ala Gln Val Asp Arg Leu Ile Thr Gly 1140 1145 1150		
Arg Leu Thr Ala Leu Asn Ala Phe Val Ser Gln Thr Leu Thr Arg Gln 1155 1160 1165		
Ala Glu Val Arg Ala Ser Arg Gln Leu Ala Lys Asp Lys Val Asn Glu 1170 1175 1180		
Cys Val Arg Ser Gln Ser Gln Arg Phe Gly Phe Cys Gly Asn Gly Thr 1185 1190 1195 1200		
His Leu Phe Ser Leu Ala Asn Ala Ala Pro Asn Gly Met Ile Phe Phe 1205 1210 1215		
His Thr Val Leu Leu Pro Thr Ala Tyr Glu Thr Val Thr Ala Trp Pro 1220 1225 1230		
Gly Ile Cys Ala Ser Asp Gly Asp Arg Thr Phe Gly Leu Val Val Lys 1235 1240 1245		
Asp Val Gln Leu Thr Leu Phe Arg Asn Leu Asp Asp Lys Phe Tyr Leu 1250 1255 1260		
Thr Pro Arg Thr Met Tyr Gln Pro Arg Val Ala Thr Ser Ser Asp Phe 1265 1270 1275 1280		
Val Gln Ile Glu Gly Cys Asp Val Leu Phe Val Asn Ala Thr Val Ser 1285 1290 1295		
Asp Leu Pro Ser Ile Ile Pro Asp Tyr Ile Asp Ile Asn Gln Thr Val 1300 1305 1310		
Gln Asp Ile Leu Glu Asn Phe Arg Pro Asn Trp Thr Val Pro Glu Leu 1315 1320 1325		
Thr Phe Asp Ile Phe Asn Ala Thr Tyr Leu Asn Leu Thr Gly Glu Ile 1330 1335 1340		
Asp Asp Leu Glu Phe Arg Ser Glu Lys Leu His Asn Thr Thr Val Glu 1345 1350 1355 1360		
Leu Ala Ile Leu Ile Asp Asn Ile Asn Asn Thr Leu Val Asn Leu Glu 1365 1370 1375		
Trp Leu Asn Arg Ile Glu Thr Tyr Val Lys Trp Pro Trp Tyr Val Trp 1380 1385 1390		
Leu Leu Ile Gly Leu Val Val Ile Phe Cys Ile Pro Leu Leu Leu Phe 1395 1400 1405		
Cys Cys Cys Ser Thr Gly Cys Cys Gly Cys Ile Gly Cys Leu Gly Ser 1410 1415 1420		
Cys Cys His Ser Ile Cys Ser Arg Arg Gln Phe Glu Asn Tyr Glu Pro		



1425                      1430                      1440  
Ile Glu Lys Val His Val His  
                                 1445

<210> 6058  
<211> 82  
<212> PRT  
<213> Transmissible gastroenteritis virus

<400> 6058  
Met Thr Phe Pro Arg Ala Leu Thr Val Ile Asp Asp Asn Gly Met Val  
1                      5                      10                      15  
Ile Asn Ile Ile Phe Trp Phe Leu Leu Ile Ile Ile Leu Ile Leu Leu  
                                 20                      25                      30  
Ser Ile Ala Leu Leu Asn Ile Ile Lys Leu Cys Met Val Cys Cys Asn  
                                 35                      40                      45  
Leu Gly Arg Thr Val Ile Ile Val Pro Ala Gln His Ala Tyr Asp Ala  
50                      55                      60  
Tyr Lys Asn Phe Met Arg Ile Lys Ala Tyr Asn Pro Asp Gly Ala Leu  
65                      70                      75                      80  
Leu Ala

<210> 6059  
<211> 262  
<212> PRT  
<213> Transmissible gastroenteritis virus

<400> 6059  
Met Lys Ile Leu Leu Ile Leu Ala Cys Val Ile Ala Cys Ala Cys Gly  
1                      5                      10                      15  
Glu Arg Tyr Cys Ala Met Lys Ser Asp Thr Asp Leu Ser Cys Arg Asn  
                                 20                      25                      30  
Ser Thr Ala Ser Asp Cys Glu Ser Cys Phe Asn Gly Gly Asp Leu Ile  
35                      40                      45  
Trp His Leu Ala Asn Trp Asn Phe Ser Trp Ser Ile Ile Leu Ile Val  
50                      55                      60  
Phe Ile Thr Val Leu Gln Tyr Gly Arg Pro Gln Phe Ser Trp Phe Val  
65                      70                      75                      80  
Tyr Gly Ile Lys Met Leu Ile Met Trp Leu Leu Trp Pro Val Val Leu  
85                      90                      95  
Ala Leu Thr Ile Phe Asn Ala Tyr Ser Glu Tyr Gln Val Ser Arg Tyr  
100                      105                      110  
Val Met Phe Gly Phe Ser Ile Ala Gly Ala Ile Val Thr Phe Val Leu  
115                      120                      125  
Trp Ile Met Tyr Phe Val Arg Ser Ile Gln Leu Tyr Arg Arg Thr Lys  
130                      135                      140  
Ser Trp Trp Ser Phe Asn Pro Glu Thr Lys Ala Ile Leu Cys Val Ser

145					150					155					160
Ala	Leu	Gly	Arg	Ser <sub>165</sub>	Tyr	Val	Leu	Pro	Leu <sub>170</sub>	Glu	Gly	Val	Pro	Thr <sub>175</sub>	Gly
Val	Thr	Leu	Thr <sub>180</sub>	Leu	Leu	Ser	Gly	Asn <sub>185</sub>	Leu	Tyr	Ala	Glu	Gly <sub>190</sub>	Phe	Lys
Ile	Ala	Gly <sub>195</sub>	Gly	Met	Asn	Ile	Asp <sub>200</sub>	Asn	Leu	Pro	Lys	Tyr <sub>205</sub>	Val	Met	Val
Ala	Leu <sub>210</sub>	Pro	Ser	Arg	Thr	Ile <sub>215</sub>	Val	Tyr	Thr	Leu	Val <sub>220</sub>	Gly	Lys	Lys	Leu
Lys <sub>225</sub>	Ala	Ser	Ser	Ala	Thr <sub>230</sub>	Gly	Trp	Ala	Tyr	Tyr <sub>235</sub>	Val	Lys	Ser	Lys	Ala <sub>240</sub>
Gly	Asp	Tyr	Ser	Thr <sub>245</sub>	Glu	Ala	Arg	Thr	Asp <sub>250</sub>	Asn	Leu	Ser	Glu	Gln <sub>255</sub>	Glu
Lys	Leu	Leu	His <sub>260</sub>	Met	Val										

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<210> 6060
<211> 382
<212> PRT
<213> Transmissible gastroenteritis virus
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Leu	Ser	Phe 35	Phe	Asn	Pro	Ile	Thr 40	Leu	Gln	Gln	Gly	Ser 45	Lys	Phe	Trp
Asn	Leu 50	Cys	Pro	Arg	Asp	Phe 55	Val	Pro	Lys	Gly	Ile 60	Gly	Asn	Arg	Asp
Gln 65	Gln	Ile	Gly	Tyr	Trp 70	Asn	Arg	Gln	Thr	Arg 75	Tyr	Arg	Met	Val	Lys 80
Gly	Gln	Arg	Lys	Glu 85	Leu	Pro	Glu	Arg	Trp 90	Phe	Phe	Tyr	Tyr	Leu 95	Gly
Thr	Gly	Pro	His 100	Ala	Asp	Ala	Lys	Phe 105	Lys	Asp	Lys	Leu	Asp 110	Gly	Val
Val	Trp	Val 115	Ala	Lys	Asp	Gly	Ala 120	Met	Asn	Lys	Pro	Thr 125	Thr	Leu	Gly
Ser	Arg 130	Gly	Ala	Asn	Asn	Glu 135	Ser	Lys	Ala	Leu	Lys 140	Phe	Asp	Gly	Lys
Val 145	Pro	Gly	Glu	Phe	Gln 150	Leu	Glu	Val	Asn	Gln 155	Ser	Arg	Asp	Asn	Ser 160
Arg	Ser	Arg	Ser	Gln 165	Ser	Arg	Ser	Arg	Ser 170	Arg	Asn	Arg	Ser	Gln 175	Ser
Arg	Gly	Arg	Gln	Gln	Phe	Asn	Asn	Lys	Lys	Asp	Asp	Ser	Val	Glu	Gln

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180 185 190  
Ala Val Leu Ala Ala Leu Lys Lys Leu Gly Val Asp Thr Glu Lys Gln  
195 200 205  
Gln Gln Arg Ser Arg Ser Lys Ser Lys Glu Arg Ser Asn Ser Lys Thr  
210 215 220  
Arg Asp Thr Thr Pro Lys Asn Glu Asn Lys His Thr Trp Lys Arg Thr  
225 230 235 240  
Ala Gly Lys Gly Asp Val Thr Arg Phe Tyr Gly Ala Arg Ser Ser Ser  
245 250 255  
Ala Asn Phe Gly Asp Thr Asp Leu Val Ala Asn Gly Ser Ser Ala Lys  
260 265 270  
His Tyr Pro Gln Leu Ala Glu Cys Val Pro Ser Val Ser Ser Ile Leu  
275 280 285  
Phe Gly Ser Tyr Trp Thr Ser Lys Glu Asp Gly Asp Gln Ile Glu Val  
290 295 300  
Thr Phe Thr His Lys Tyr His Leu Pro Lys Asp Asp Pro Lys Thr Gly  
305 310 315 320  
Gln Phe Leu Gln Gln Ile Asn Ala Tyr Ala Arg Pro Ser Glu Val Ala  
325 330 335  
Lys Glu Gln Arg Lys Arg Lys Ser Arg Ser Lys Ser Ala Glu Arg Ser  
340 345 350  
Glu Gln Asp Val Val Pro Asp Ala Leu Ile Glu Asn Tyr Thr Asp Val  
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Phe Asp Asp Thr Gln Val Glu Ile Ile Asp Glu Val Thr Asn  
370 375 380

<210> 6061  
<211> 1383  
<212> PRT  
<213> Porcine epidemic diarrhea virus

<400> 6061  
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Leu Ser Leu Pro Gln Asp Val Thr Arg Cys Gln Ser Thr Thr Asn Phe  
20 25 30  
Arg Arg Phe Phe Ser Lys Phe Asn Val Gln Ala Pro Ala Val Val Val  
35 40 45  
Leu Gly Gly Tyr Leu Pro Ser Met Asn Ser Ser Ser Trp Tyr Cys Gly  
50 55 60  
Thr Gly Ile Glu Thr Ala Ser Gly Val His Gly Ile Phe Leu Ser Tyr  
65 70 75 80  
Ile Asp Ser Gly Gln Gly Phe Glu Ile Gly Ile Ser Gln Glu Pro Phe  
85 90 95  
Asp Pro Ser Gly Tyr Gln Leu Tyr Leu His Lys Ala Thr Asn Gly Asn

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100					105					110					
Thr	Asn	Ala	Ile	Ala	Arg	Leu	Arg	Ile	Cys	Gln	Phe	Pro	Asp	Asn	Lys
		115					120					125			
Thr	Leu	Gly	Pro	Thr	Val	Asn	Asp	Val	Thr	Thr	Gly	Arg	Asn	Cys	Leu
	130					135					140				
Phe	Asn	Lys	Ala	Ile	Pro	Ala	Tyr	Met	Arg	Asp	Gly	Lys	Asp	Ile	Val
145					150					155					160
Val	Gly	Ile	Thr	Trp	Asp	Asn	Asp	Arg	Val	Thr	Val	Phe	Ala	Asp	Lys
				165					170					175	
Ile	Tyr	His	Phe	Tyr	Leu	Lys	Asn	Asp	Trp	Ser	Arg	Val	Ala	Thr	Arg
			180					185					190		
Cys	Tyr	Asn	Arg	Arg	Ser	Cys	Ala	Met	Gln	Tyr	Val	Tyr	Thr	Pro	Thr
		195					200					205			
Tyr	Tyr	Met	Leu	Asn	Val	Thr	Ser	Ala	Gly	Glu	Asp	Gly	Ile	Tyr	Tyr
	210					215					220				
Glu	Pro	Cys	Thr	Ala	Asn	Cys	Thr	Gly	Tyr	Ala	Ala	Asn	Val	Phe	Ala
225					230					235					240
Thr	Asp	Ser	Asn	Gly	His	Ile	Pro	Glu	Gly	Phe	Ser	Phe	Asn	Asn	Trp
				245					250					255	
Phe	Leu	Leu	Ser	Asn	Asp	Ser	Thr	Leu	Leu	His	Gly	Lys	Val	Val	Ser
			260					265					270		
Asn	Gln	Pro	Leu	Leu	Val	Asn	Cys	Leu	Leu	Ala	Ile	Pro	Lys	Ile	Tyr
		275					280					285			
Gly	Leu	Gly	Gln	Phe	Phe	Ser	Phe	Asn	His	Thr	Met	Asp	Gly	Val	Cys
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Asn	Gly	Ala	Ala	Val	Asp	Arg	Ala	Pro	Glu	Ala	Leu	Arg	Phe	Asn	Ile
305					310					315					320
Asn	Asp	Thr	Ser	Val	Ile	Leu	Ala	Glu	Gly	Ser	Ile	Val	Leu	His	Thr
				325					330					335	
Ala	Leu	Gly	Thr	Asn	Leu	Ser	Phe	Val	Cys	Ser	Asn	Ser	Ser	Asp	Pro
			340					345					350		
His	Leu	Ala	Ile	Phe	Ala	Ile	Pro	Leu	Gly	Ala	Thr	Glu	Val	Pro	Tyr
		355					360					365			
Tyr	Cys	Phe	Leu	Lys	Val	Asp	Thr	Tyr	Asn	Ser	Thr	Val	Tyr	Lys	Phe
	370					375					380				
Leu	Ala	Val	Leu	Pro	Pro	Thr	Val	Arg	Glu	Ile	Val	Ile	Thr	Lys	Tyr
385					390					395					400
Gly	Asp	Val	Tyr	Val	Asn	Gly	Phe	Gly	Tyr	Leu	His	Leu	Gly	Leu	Leu
				405					410					415	
Asp	Ala	Val	Thr	Ile	Asn	Phe	Thr	Gly	His	Gly	Thr	Asp	Asp	Asp	Val
			420					425					430		
Ser	Gly	Phe	Trp	Thr	Ile	Ala	Ser	Thr	Asn	Phe	Val	Asp	Ala	Leu	Ile

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435 440 445  
 Glu Val Gln Gly Thr Ser Ile Gln Arg Ile Leu Tyr Cys Asp Asp Pro  
 450 455 460  
 Val Ser Gln Leu Lys Cys Ser Gln Val Ala Phe Asp Leu Asp Asp Gly  
 465 470 475 480  
 Phe Tyr Pro Ile Ser Ser Arg Asn Leu Leu Ser His Glu Gln Pro Ile  
 485 490 495  
 Ser Phe Val Thr Leu Pro Ser Phe Asn Asp His Ser Phe Val Asn Ile  
 500 505 510  
 Thr Val Ser Ala Ala Phe Gly Gly Leu Ser Ser Ala Asn Leu Val Ala  
 515 520 525  
 Ser Asp Thr Thr Ile Asn Gly Phe Ser Ser Phe Cys Val Asp Thr Arg  
 530 535 540  
 Gln Phe Thr Ile Thr Leu Phe Tyr Asn Val Thr Asn Ser Tyr Gly Tyr  
 545 550 555 560  
 Val Ser Lys Ser Gln Asp Ser Asn Cys Pro Phe Thr Leu Gln Ser Val  
 565 570 575  
 Asn Asp Tyr Leu Ser Phe Ser Lys Phe Cys Val Ser Thr Ser Leu Leu  
 580 585 590  
 Ala Gly Ala Cys Thr Ile Asp Leu Phe Gly Tyr Pro Ala Phe Gly Ser  
 595 600 605  
 Gly Val Lys Leu Thr Ser Leu Tyr Phe Gln Phe Thr Lys Gly Glu Leu  
 610 615 620  
 Ile Thr Gly Thr Pro Lys Pro Leu Glu Gly Ile Thr Asp Val Ser Phe  
 625 630 635 640  
 Met Thr Leu Asp Val Cys Thr Lys Tyr Thr Ile Tyr Gly Phe Lys Gly  
 645 650 655  
 Glu Gly Ile Ile Thr Leu Thr Asn Ser Ser Ile Leu Ala Gly Val Tyr  
 660 665 670  
 Tyr Thr Ser Asp Ser Gly Gln Leu Leu Ala Phe Lys Asn Val Thr Ser  
 675 680 685  
 Gly Ala Val Tyr Ser Val Thr Pro Cys Ser Phe Ser Glu Gln Ala Ala  
 690 695 700  
 Tyr Val Asn Asp Asp Ile Val Gly Val Ile Ser Ser Leu Ser Asn Ser  
 705 710 715 720  
 Thr Phe Asn Asn Thr Arg Glu Leu Pro Gly Phe Phe Tyr His Ser Asn  
 725 730 735  
 Asp Gly Ser Asn Cys Thr Glu Pro Val Leu Val Tyr Ser Asn Ile Gly  
 740 745 750  
 Val Cys Lys Ser Gly Ser Ile Gly Tyr Val Pro Ser Gln Tyr Gly Gln  
 755 760 765  
 Val Lys Ile Ala Pro Thr Val Thr Gly Asn Ile Ser Ile Pro Thr Asn

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770		775		780															
Phe	Ser	Met	Ser	Ile	Arg	Thr	Glu	Tyr	Leu	Gln	Leu	Tyr	Asn	Thr	Pro				
785					790					795					800				
Val	Ser	Val	Asp	Cys	Ala	Thr	Tyr	Val	Cys	Asn	Gly	Asn	Ser	Arg	Cys				
			805						810					815					
Lys	Gln	Leu	Leu	Thr	Gln	Tyr	Thr	Ala	Ala	Cys	Lys	Thr	Ile	Glu	Ser				
			820					825					830						
Ala	Leu	Gln	Leu	Ser	Ala	Arg	Leu	Glu	Ser	Val	Glu	Val	Asn	Ser	Met				
		835					840					845							
Leu	Thr	Ile	Ser	Glu	Glu	Ala	Leu	Gln	Leu	Ala	Thr	Ile	Ser	Ser	Phe				
	850					855					860								
Asn	Gly	Asp	Gly	Tyr	Asn	Phe	Thr	Asn	Val	Leu	Gly	Ala	Ser	Val	Tyr				
865					870					875					880				
Asp	Pro	Ala	Ser	Gly	Arg	Val	Val	Gln	Lys	Arg	Ser	Val	Ile	Glu	Asp				
				885					890					895					
Leu	Leu	Phe	Asn	Lys	Val	Val	Thr	Asn	Gly	Leu	Gly	Thr	Val	Asp	Glu				
			900					905					910						
Asp	Tyr	Lys	Arg	Cys	Ser	Asn	Gly	Arg	Ser	Val	Ala	Asp	Leu	Val	Cys				
		915					920					925							
Ala	Gln	Tyr	Tyr	Ser	Gly	Val	Met	Val	Leu	Pro	Gly	Val	Val	Asp	Ala				
	930					935					940								
Glu	Lys	Leu	His	Met	Tyr	Ser	Ala	Ser	Leu	Ile	Gly	Gly	Met	Ala	Leu				
945					950					955					960				
Gly	Gly	Ile	Thr	Ala	Ala	Ala	Ala	Leu	Pro	Phe	Ser	Tyr	Ala	Val	Gln				
				965					970					975					
Ala	Arg	Leu	Asn	Tyr	Leu	Ala	Leu	Gln	Thr	Asp	Val	Leu	Gln	Arg	Asn				
			980					985					990						
Gln	Gln	Leu	Leu	Ala	Glu	Ser	Phe	Asn	Ser	Ala	Ile	Gly	Asn	Ile	Thr				
		995					1000					1005							
Ser	Ala	Phe	Glu	Ser	Val	Lys	Glu	Ala	Ile	Ser	Gln	Thr	Ser	Lys	Gly				
	1010					1015					1020								
Leu	Asn	Thr	Val	Ala	His	Ala	Leu	Thr	Lys	Val	Gln	Glu	Val	Val	Asn				
1025					1030					1035					1040				
Ser	Gln	Gly	Ser	Ala	Leu	Asn	Gln	Leu	Thr	Val	Gln	Leu	Gln	His	Asn				
				1045					1050					1055					
Phe	Gln	Ala	Ile	Ser	Ser	Ser	Ile	Asp	Asp	Ile	Tyr	Ser	Arg	Leu	Asp				
			1060					1065					1070						
Ile	Leu	Ser	Ala	Asp	Val	Gln	Val	Asp	Arg	Leu	Ile	Thr	Gly	Arg	Leu				
		1075					1080					1085							
Ser	Ala	Leu	Asn	Ala	Phe	Val	Ala	Gln	Thr	Leu	Thr	Lys	Tyr	Thr	Glu				
	1090					1095					1100								
Val	Gln	Ala	Ser	Arg	Lys	Leu	Ala	Gln	Gln	Lys	Val	Asn	Glu	Cys	Val				

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1105                      1110                      1115                      1120  
 Lys Ser Gln Ser Gln Arg Tyr Gly Phe Cys Gly Gly Asp Gly Glu His  
                                  1125                      1130                      1135  
 Ile Phe Ser Leu Val Gln Ala Ala Pro Gln Gly Leu Leu Phe Leu His  
                                  1140                      1145                      1150  
 Thr Val Leu Val Pro Gly Asp Phe Val Asn Val Leu Ala Ile Ala Gly  
                                  1155                      1160                      1165  
 Leu Cys Val Asn Gly Glu Ile Ala Leu Thr Leu Arg Glu Pro Gly Leu  
                                  1170                      1175                      1180  
 Val Leu Phe Thr His Glu Leu Gln Thr Tyr Thr Ala Thr Glu Tyr Phe  
                                  1185                      1190                      1195                      1200  
 Val Ser Ser Arg Arg Met Phe Glu Pro Arg Lys Pro Thr Val Ser Asp  
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 Phe Val Gln Ile Glu Ser Cys Val Val Thr Tyr Val Asn Leu Thr Ser  
                                  1220                      1225                      1230  
 Asp Gln Leu Pro Asp Val Ile Pro Asp Tyr Ile Asp Val Asn Lys Thr  
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 Leu Asp Glu Ile Leu Ala Ser Leu Pro Asn Arg Thr Gly Pro Ser Leu  
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 Pro Leu Asp Val Phe Asn Ala Thr Tyr Leu Asn Leu Thr Gly Glu Ile  
                                  1265                      1270                      1275                      1280  
 Ala Asp Leu Glu Gln Arg Ser Glu Ser Leu Arg Asn Thr Thr Glu Glu  
                                  1285                      1290                      1295  
 Leu Arg Ser Leu Ile Asn Asn Ile Asn Asn Thr Leu Val Asp Leu Glu  
                                  1300                      1305                      1310  
 Trp Leu Asn Arg Val Glu Thr Tyr Ile Lys Trp Pro Trp Trp Val Trp  
                                  1315                      1320                      1325  
 Leu Ile Ile Val Ile Val Leu Ile Phe Val Val Ser Leu Leu Val Phe  
                                  1330                      1335                      1340  
 Cys Cys Ile Ser Thr Gly Cys Cys Gly Cys Cys Gly Cys Cys Gly Ala  
                                  1345                      1350                      1355                      1360  
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                                  1365                      1370                      1375  
 Phe Glu Lys Val His Val Gln  
                                  1380

<210> 6062  
 <211> 76  
 <212> PRT  
 <213> Porcine epidemic diarrhea virus

<400> 6062  
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20 25 30  
 Gln Leu Val Asn Leu Cys Phe Thr Cys His Arg Leu Cys Asn Ser Ala  
           35                  40                  45  
 Val Tyr Thr Pro Ile Gly Arg Leu Tyr Arg Val Tyr Lys Ser Tyr Met  
           50                  55                  60  
 Arg Ile Asp Pro Leu Pro Ser Thr Val Ile Asp Val  
           65                  70                  75

<210> 6063  
 <211> 226  
 <212> PRT  
 <213> Porcine epidemic diarrhea virus

<400> 6063  
 Met Ser Asn Gly Ser Ile Pro Val Asp Glu Val Ile Glu His Leu Arg  
   1                  5                  10                  15  
 Asn Trp Asn Phe Thr Trp Asn Ile Ile Leu Thr Ile Leu Leu Val Val  
           20                  25                  30  
 Leu Gln Tyr Gly His Tyr Lys Tyr Ser Val Phe Leu Tyr Gly Val Lys  
           35                  40                  45  
 Met Ala Ile Leu Trp Ile Leu Trp Pro Leu Val Leu Ala Leu Ser Leu  
           50                  55                  60  
 Phe Asp Ala Trp Ala Ser Phe Gln Val Asn Trp Val Phe Phe Ala Phe  
           65                  70                  75                  80  
 Ser Ile Leu Met Ala Cys Ile Thr Leu Met Leu Trp Ile Met Tyr Phe  
                   85                  90  
 Val Asn Ser Ile Arg Leu Trp Arg Arg Thr His Ser Trp Trp Ser Phe  
           100                  105                  110  
 Asn Pro Glu Thr Asp Ala Leu Leu Thr Thr Ser Val Met Gly Arg Gln  
           115                  120                  125  
 Val Cys Ile Pro Val Leu Gly Ala Pro Thr Gly Val Thr Leu Thr Leu  
           130                  135                  140  
 Leu Ser Gly Thr Leu Leu Val Glu Gly Tyr Lys Val Ala Thr Gly Val  
           145                  150                  155                  160  
 Gln Val Ser Gln Leu Pro Asn Phe Val Thr Val Ala Lys Ala Thr Thr  
           165                  170                  175  
 Thr Ile Val Tyr Gly Arg Val Gly Arg Ser Val Asn Ala Ser Ser Gly  
           180                  185                  190  
 Thr Gly Trp Ala Phe Tyr Val Arg Ser Lys His Gly Asp Tyr Ser Ala  
           195                  200                  205  
 Val Ser Asn Pro Ser Ala Val Leu Thr Asp Ser Glu Lys Val Leu His  
           210                  215                  220  
 Leu Val  
   225

<210> 6064



SEQLIST-20480.TXT

<211> 441  
 <212> PRT  
 <213> Porcine epidemic diarrhea virus

<400> 6064

Met Ala Ser Val Ser Phe Gln Asp Arg Gly Arg Lys Arg Val Pro Leu  
 1 5 10 15  
 Ser Leu Tyr Ala Pro Leu Arg Val Thr Asn Asp Lys Pro Leu Ser Lys  
 20 25 30  
 Val Leu Ala Asn Asn Ala Val Pro Thr Asn Lys Gly Asn Lys Asp Gln  
 35 40 45  
 Gln Ile Gly Tyr Trp Asn Glu Gln Ile Arg Trp Arg Met Arg Arg Gly  
 50 55 60  
 Glu Arg Ile Glu Gln Pro Ser Asn Trp His Phe Tyr Tyr Leu Gly Thr  
 65 70 75 80  
 Gly Pro His Gly Asp Leu Arg Tyr Arg Thr Arg Thr Glu Gly Val Phe  
 85 90 95  
 Trp Val Ala Lys Glu Gly Ala Lys Thr Glu Pro Thr Asn Leu Gly Val  
 100 105 110  
 Arg Lys Ala Ser Glu Lys Pro Ile Ile Pro Lys Phe Ser Gln Gln Leu  
 115 120 125  
 Pro Ser Val Val Glu Ile Val Glu Pro Asn Thr Pro Pro Ala Ser Arg  
 130 135 140  
 Ala Asn Ser Arg Ser Arg Ser Arg Gly Asn Gly Asn Asn Arg Ser Arg  
 145 150 155 160  
 Ser Pro Ser Asn Asn Arg Gly Asn Asn Gln Ser Arg Gly Asn Ser Gln  
 165 170 175  
 Asn Arg Gly Asn Asn Gln Gly Arg Gly Ala Ser Gln Asn Arg Gly Gly  
 180 185 190  
 Asn Asn Asn Asn Asn Asn Lys Ser Arg Asn Gln Ser Asn Asn Arg Asn  
 195 200 205  
 Gln Ser Asn Asp Arg Gly Gly Val Thr Ser Arg Asp Asp Leu Val Ala  
 210 215 220  
 Ala Val Lys Asp Ala Leu Lys Ser Leu Gly Ile Gly Glu Asn Pro Asp  
 225 230 235 240  
 Arg His Lys Gln Gln Gln Lys Pro Lys Gln Glu Lys Ser Asp Asn Ser  
 245 250 255  
 Gly Lys Asn Thr Pro Lys Lys Asn Lys Ser Arg Ala Thr Ser Lys Glu  
 260 265 270  
 Arg Asp Leu Lys Asp Ile Pro Glu Trp Arg Arg Ile Pro Lys Gly Glu  
 275 280 285  
 Asn Ser Val Ala Ala Cys Phe Gly Pro Arg Gly Gly Phe Lys Asn Phe  
 290 295 300  
 Gly Asp Ala Glu Phe Val Glu Lys Gly Val Asp Ala Ser Gly Tyr Ala

[illegible]

Gln	Ile	Ala	Ser	Leu 325	Ala	Pro	Asn	Val	Ala 330	Ala	Leu	Leu	Phe	Gly 335	Gly
Asn	Val	Ala	Val 340	Arg	Glu	Leu	Ala	Asp 345	Ser	Tyr	Glu	Ile	Thr 350	Tyr	Asn
Tyr	Lys	Met 355	Thr	Val	Pro	Lys	Ser 360	Asp	Pro	Asn	Val	Glu 365	Leu	Leu	Val
Ser	Gln 370	Val	Asp	Ala	Phe	Lys 375	Thr	Gly	Asn	Ala	Lys 380	Leu	Gln	Arg	Lys
Lys 385	Glu	Lys	Lys	Asn	Lys 390	Arg	Glu	Thr	Thr	Leu 395	Gln	Gln	His	Glu	Glu 400
Ala	Ile	Tyr	Asp	Asp 405	Val	Gly	Ala	Pro	Ser 410	Asp	Val	Thr	His	Ala 415	Asn
Leu	Glu	Trp	Asp 420	Thr	Ala	Val	Asp	Gly 425	Gly	Asp	Thr	Ala	Val 430	Glu	Ile
Ile	Asn	Glu 435	Ile	Phe	Asp	Thr	Gly 440	Asn							

<210>	6065
<211>	1363
<212>	PRT
<213>	Bovine coronavirus

<400> Met 1	Phe	6065 Leu	Ile	Leu 5	Leu	Ile	Ser	Leu	Pro 10	Thr	Ala	Phe	Ala	Val 15	Ile
Gly	Asp	Leu	Lys 20	Cys	Thr	Thr	Val	Ser 25	Ile	Asn	Asp	Val	Asp 30	Thr	Gly
Val	Pro	Ser 35	Ile	Ser	Thr	Asp	Thr 40	Val	Asp	Val	Thr	Asn 45	Gly	Leu	Gly
Thr	Tyr 50	Tyr	Val	Leu	Asp	Arg 55	Val	Tyr	Leu	Asn	Thr 60	Thr	Leu	Leu	Leu
Asn 65	Gly	Tyr	Tyr	Pro	Thr 70	Ser	Gly	Ser	Thr	Tyr 75	Arg	Asn	Met	Ala	Leu 80
Lys	Gly	Thr	Leu	Leu 85	Leu	Ser	Thr	Leu	Trp 90	Phe	Lys	Pro	Pro	Phe 95	Leu
Ser	Asp	Phe	Thr 100	Asn	Gly	Ile	Phe	Ala 105	Lys	Val	Lys	Asn	Thr 110	Lys	Val
Ile	Lys	Asp 115	Gly	Val	Met	Tyr	Ser 120	Glu	Phe	Pro	Ala	Ile 125	Thr	Ile	Gly
Ser	Thr 130	Phe	Val	Asn	Thr	Ser 135	Tyr	Ser	Val	Val	Val 140	Gln	Pro	His	Thr
Thr 145	Ile	Leu	Gly	Asn	Lys 150	Leu	Gln	Gly	Phe	Leu 155	Glu	Ile	Ser	Val	Cys 160
Gln	Tyr	Thr	Met	Cys	Glu	Tyr	Pro	Asn	Thr	Ile	Cys	Asn	Pro	Asn	Leu

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500										505					510				
Gly	Thr	Cys	Pro	Ala	Gly	Thr	Asn	Tyr	Leu	Thr	Cys	His	Asn	Ala	Ala				
		515					520					525							
Gln	Cys	Asp	Cys	Leu	Cys	Thr	Pro	Asp	Pro	Ile	Thr	Ser	Lys	Ala	Thr				
	530					535					540								
Gly	Pro	Tyr	Lys	Cys	Pro	Gln	Thr	Lys	Tyr	Leu	Val	Gly	Ile	Gly	Glu				
545					550					555					560				
His	Cys	Ser	Gly	Leu	Ala	Ile	Lys	Ser	Asp	His	Cys	Gly	Gly	Asn	Pro				
				565					570					575					
Cys	Thr	Cys	Gln	Pro	Gln	Ala	Phe	Leu	Gly	Trp	Ser	Val	Asp	Ser	Cys				
			580					585					590						
Leu	Gln	Gly	Asp	Arg	Cys	Asn	Ile	Phe	Ala	Asn	Phe	Ile	Leu	His	Asp				
		595					600					605							
Val	Asn	Ser	Gly	Thr	Thr	Cys	Ser	Thr	Asp	Leu	Gln	Lys	Ser	Asn	Thr				
	610					615					620								
Asp	Ile	Ile	Leu	Gly	Val	Cys	Val	Asn	Tyr	Asp	Leu	Tyr	Gly	Ile	Thr				
625					630					635					640				
Gly	Gln	Gly	Ile	Phe	Val	Glu	Val	Asn	Ala	Thr	Tyr	Tyr	Asn	Ser	Trp				
				645					650					655					
Gln	Asn	Leu	Leu	Tyr	Asp	Ser	Asn	Gly	Asn	Leu	Tyr	Gly	Phe	Arg	Asp				
			660					665					670						
Tyr	Leu	Thr	Asn	Arg	Thr	Phe	Met	Ile	Arg	Ser	Cys	Tyr	Ser	Gly	Arg				
		675					680					685							
Val	Ser	Ala	Ala	Phe	His	Ala	Asn	Ser	Ser	Glu	Pro	Ala	Leu	Leu	Phe				
	690					695					700								
Arg	Asn	Ile	Lys	Cys	Asn	Tyr	Val	Phe	Asn	Asn	Thr	Leu	Ser	Arg	Gln				
705					710					715					720				
Leu	Gln	Pro	Ile	Asn	Tyr	Phe	Asp	Ser	Tyr	Leu	Gly	Cys	Val	Val	Asn				
				725					730					735					
Ala	Asp	Asn	Ser	Thr	Ser	Ser	Val	Val	Gln	Thr	Cys	Asp	Leu	Thr	Val				
			740					745					750						
Gly	Ser	Gly	Tyr	Cys	Val	Asp	Tyr	Ser	Thr	Lys	Arg	Arg	Ser	Arg	Arg				
		755					760					765							
Ser	Ile	Thr	Thr	Gly	Tyr	Arg	Phe	Thr	Asn	Phe	Glu	Pro	Phe	Thr	Val				
	770					775					780								
Asn	Ser	Val	Asn	Asp	Ser	Leu	Glu	Pro	Val	Gly	Gly	Leu	Tyr	Glu	Ile				
785					790					795					800				
Gln	Ile	Pro	Ser	Glu	Phe	Thr	Ile	Gly	Asn	Met	Glu	Glu	Phe	Ile	Gln				
				805					810					815					
Thr	Ser	Ser	Pro	Lys	Val	Thr	Ile	Asp	Cys	Ser	Ala	Phe	Val	Cys	Gly				
			820					825					830						
Asp	Tyr	Ala	Ala	Cys	Lys	Ser	Gln	Leu	Val	Glu	Tyr	Gly	Ser	Phe	Cys				

835 840 845

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1170 1175 1180  
Pro Lys Ser Gly Tyr Phe Val Asn Val Asn Asn Thr Trp Met Phe Thr  
1185 1190 1195 1200  
Gly Ser Gly Tyr Tyr Tyr Pro Glu Pro Ile Thr Gly Asn Asn Val Val  
1205 1210 1215  
Val Met Ser Thr Cys Ala Val Asn Tyr Thr Lys Ala Pro Asp Val Met  
1220 1225 1230  
Leu Asn Ile Ser Thr Pro Asn Leu Pro Tyr Phe Lys Glu Glu Leu Asp  
1235 1240 1245  
Gln Trp Phe Lys Asn Gln Thr Ser Val Ala Pro Asp Leu Ser Leu Asp  
1250 1255 1260  
Tyr Ile Asn Val Thr Phe Leu Asp Leu Gln Asp Glu Met Asn Arg Leu  
1265 1270 1275 1280  
Gln Glu Ala Ile Lys Val Leu Asn Gln Ser Tyr Ile Asn Leu Lys Asp  
1285 1290 1295  
Ile Gly Thr Tyr Glu Tyr Tyr Val Lys Trp Pro Trp Tyr Val Trp Leu  
1300 1305 1310  
Leu Ile Gly Phe Ala Gly Val Ala Met Leu Val Leu Leu Phe Phe Ile  
1315 1320 1325  
Cys Cys Cys Thr Gly Cys Gly Thr Ser Cys Phe Lys Lys Cys Gly Gly  
1330 1335 1340  
Cys Cys Asp Asp Tyr Thr Gly His Gln Glu Leu Val Ile Lys Thr Ser  
1345 1350 1355 1360

His Glu Asp

<210> 6066  
<211> 84  
<212> PRT  
<213> Bovine coronavirus

<400> 6066  
Met Phe Met Ala Asp Ala Tyr Phe Ala Asp Thr Val Trp Tyr Val Gly  
1 5 10 15  
Gln Ile Ile Phe Ile Val Ala Ile Cys Leu Leu Val Ile Ile Val Val  
20 25 30  
Val Ala Phe Leu Ala Thr Phe Lys Leu Cys Ile Gln Leu Cys Gly Met  
35 40 45  
Cys Asn Thr Leu Val Leu Ser Pro Ser Ile Tyr Val Phe Asn Arg Gly  
50 55 60  
Arg Gln Phe Tyr Glu Phe Tyr Asn Asp Val Lys Pro Pro Val Leu Asp  
65 70 75 80

Val Asp Asp Val

<210> 6067

SEQLIST-20480.TXT

<211> 230  
<212> PRT  
<213> Bovine coronavirus

<400> 6067  
Met Ser Ser Val Thr Thr Pro Ala Pro Val Tyr Thr Trp Thr Ala Asp  
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Glu Ala Ile Lys Phe Leu Lys Glu Trp Asn Phe Ser Leu Gly Ile Ile  
20 25 30  
Leu Leu Phe Ile Thr Val Ile Leu Gln Phe Gly Tyr Thr Ser Arg Ser  
35 40 45  
Met Phe Val Tyr Val Ile Lys Met Val Ile Leu Trp Leu Met Trp Pro  
50 55 60  
Leu Thr Ile Ile Leu Thr Ile Phe Asn Cys Val Tyr Ala Leu Asn Asn  
65 70 75 80  
Val Tyr Leu Gly Phe Ser Ile Val Phe Thr Ile Val Ala Ile Ile Met  
85 90 95  
Trp Ile Val Tyr Phe Val Asn Ser Ile Arg Leu Phe Ile Arg Thr Gly  
100 105 110  
Ser Trp Trp Ser Phe Asn Pro Glu Thr Asn Asn Leu Met Cys Ile Asp  
115 120 125  
Met Lys Gly Arg Met Tyr Val Arg Pro Ile Ile Glu Asp Tyr His Thr  
130 135 140  
Leu Thr Val Thr Ile Ile Arg Gly His Leu Tyr Met Gln Gly Ile Lys  
145 150 155 160  
Leu Gly Thr Gly Tyr Ser Leu Ser Asp Leu Pro Ala Tyr Val Thr Val  
165 170 175  
Ala Lys Val Ser His Leu Leu Thr Tyr Lys Arg Gly Phe Leu Asp Lys  
180 185 190  
Ile Gly Asp Thr Ser Gly Phe Ala Val Tyr Val Lys Ser Lys Val Gly  
195 200 205  
Asn Tyr Arg Leu Pro Ser Thr Gln Lys Gly Ser Gly Leu Asp Thr Ala  
210 215 220  
Leu Leu Arg Asn Asn Ile  
225 230

<210> 6068  
<211> 448  
<212> PRT  
<213> Bovine coronavirus

<400> 6068  
Met Ser Phe Thr Pro Gly Lys Gln Ser Ser Ser Arg Ala Ser Ser Gly  
1 5 10 15  
Asn Arg Ser Gly Asn Gly Ile Leu Lys Trp Ala Asp Gln Ser Asp Gln  
20 25 30  
Ser Arg Asn Val Gln Thr Arg Gly Arg Arg Ala Gln Pro Lys Gln Thr

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35	40	45														
Ala Thr Ser Gln Gln Pro Ser Gly Gly Asn Val Val Pro Tyr Tyr Ser	50	55	60													
Trp Phe Ser Gly Ile Thr Gln Phe Gln Lys Gly Lys Glu Phe Glu Phe	65	70	75	80												
Ala Glu Gly Gln Gly Val Pro Ile Ala Pro Gly Val Pro Ala Thr Glu	85	90	95													
Ala Lys Gly Tyr Trp Tyr Arg His Asn Arg Arg Ser Phe Lys Thr Ala	100	105	110													
Asp Gly Asn Gln Arg Gln Leu Leu Pro Arg Trp Tyr Phe Tyr Tyr Leu	115	120	125													
Gly Thr Gly Pro His Ala Lys Asp Gln Tyr Gly Thr Asp Ile Asp Gly	130	135	140													
Val Tyr Trp Val Ala Ser Asn Gln Ala Asp Val Asn Thr Pro Ala Asp	145	150	155	160												
Ile Leu Asp Arg Asp Pro Ser Ser Asp Glu Ala Ile Pro Thr Arg Phe	165	170	175													
Pro Pro Gly Thr Val Leu Pro Gln Gly Tyr Tyr Ile Glu Gly Ser Gly	180	185	190													
Arg Ser Ala Pro Asn Ser Arg Ser Thr Ser Arg Ala Ser Ser Arg Ala	195	200	205													
Ser Ser Ala Gly Ser Arg Ser Arg Ala Asn Ser Gly Asn Arg Thr Pro	210	215	220													
Thr Ser Gly Val Thr Pro Asp Met Ala Asp Gln Ile Ala Ser Leu Val	225	230	235	240												
Leu Ala Lys Leu Gly Lys Asp Ala Ala Lys Pro Gln Gln Val Thr Lys	245	250	255													
Gln Thr Ala Lys Glu Ile Arg Gln Lys Ile Leu Asn Lys Pro Arg Gln	260	265	270													
Lys Arg Ser Pro Asn Lys Gln Cys Thr Val Gln Gln Cys Phe Gly Lys	275	280	285													
Arg Gly Pro Asn Gln Asn Phe Gly Gly Gly Glu Met Leu Lys Leu Gly	290	295	300													
Thr Ser Asp Pro Gln Phe Pro Ile Leu Ala Glu Leu Ala Pro Thr Ala	305	310	315	320												
Gly Ala Phe Phe Phe Gly Ser Arg Leu Glu Leu Ala Lys Val Gln Asn	325	330	335													
Leu Ser Gly Asn Leu Asp Glu Pro Gln Lys Asp Val Tyr Glu Leu Arg	340	345	350													
Tyr Asn Gly Ala Ile Arg Phe Asp Ser Thr Leu Ser Gly Phe Glu Thr	355	360	365													
Ile Met Lys Val Leu Asn Glu Asn Leu Asn Ala Tyr Gln Gln Gln Asp																



SEQLIST-20480.TXT

370 375 380  
 Gly Thr Met Asn Met Ser Pro Lys Pro Gln Arg Gln Arg Gly Gln Lys  
 385 390 395 400  
 Asn Gly Gln Gly Glu Asn Asp Asn Ile Ser Val Ala Ala Pro Lys Ser  
 405 410 415  
 Arg Val Gln Gln Asn Lys Ile Arg Glu Leu Thr Ala Glu Asp Ile Ser  
 420 425 430  
 Leu Leu Lys Lys Met Asp Glu Pro Phe Thr Glu Asp Thr Ser Glu Ile  
 435 440 445

<210> 6069  
 <211> 1324  
 <212> PRT  
 <213> Murine hepatitis virus

<400> 6069  
 Met Leu Phe Val Phe Ile Leu Phe Leu Pro Ser Cys Leu Gly Tyr Ile  
 1 5 10 15  
 Gly Asp Phe Arg Cys Ile Gln Leu Val Asn Ser Asn Gly Ala Asn Val  
 20 25 30  
 Ser Ala Pro Ser Ile Ser Thr Glu Thr Val Glu Val Ser Gln Gly Leu  
 35 40 45  
 Gly Thr Tyr Tyr Val Leu Asp Arg Val Tyr Leu Asn Ala Thr Leu Leu  
 50 55 60  
 Leu Thr Gly Tyr Tyr Pro Val Asp Gly Ser Lys Phe Arg Asn Leu Ala  
 65 70 75 80  
 Leu Thr Gly Thr Asn Ser Val Ser Leu Ser Trp Phe Gln Pro Pro Tyr  
 85 90 95  
 Leu Ser Gln Phe Asn Asp Gly Ile Phe Ala Lys Val Gln Asn Leu Lys  
 100 105 110  
 Thr Ser Thr Pro Ser Gly Ala Thr Ala Tyr Phe Pro Thr Ile Val Ile  
 115 120 125  
 Gly Ser Leu Phe Gly Tyr Thr Ser Tyr Thr Val Val Ile Glu Pro Tyr  
 130 135 140  
 Asn Gly Val Ile Met Ala Ser Val Cys Gln Tyr Thr Ile Cys Leu Leu  
 145 150 155 160  
 Pro Tyr Thr Asp Cys Lys Pro Asn Thr Asn Gly Asn Lys Leu Ile Gly  
 165 170 175  
 Phe Trp His Thr Asp Val Lys Pro Pro Ile Cys Val Leu Lys Arg Asn  
 180 185 190  
 Phe Thr Leu Asn Val Asn Ala Asp Ala Phe Tyr Phe His Phe Tyr Gln  
 195 200 205  
 His Gly Gly Thr Phe Tyr Ala Tyr Tyr Ala Asp Lys Pro Ser Ala Thr  
 210 215 220

SEQLIST-20480.TXT

Thr Phe Leu Phe Ser Val Tyr Ile Gly Asp Ile Leu Thr Gln Tyr Tyr  
 225 230 235 240  
 Val Leu Pro Phe Ile Cys Asn Pro Thr Ala Gly Ser Thr Phe Ala Pro  
 245 250 255  
 Arg Tyr Trp Val Thr Pro Leu Val Lys Arg Gln Tyr Leu Phe Asn Phe  
 260 265 270  
 Asn Gln Lys Gly Val Ile Thr Ser Ala Val Asp Cys Ala Ser Ser Tyr  
 275 280 285  
 Thr Ser Glu Ile Lys Cys Lys Thr Gln Ser Met Leu Pro Ser Thr Gly  
 290 295 300  
 Val Tyr Glu Leu Ser Gly Tyr Thr Val Gln Pro Val Gly Val Val Tyr  
 305 310 315 320  
 Arg Arg Val Ala Asn Leu Pro Ala Cys Asn Ile Glu Glu Trp Leu Thr  
 325 330 335  
 Ala Arg Ser Val Pro Ser Pro Leu Asn Trp Glu Arg Lys Thr Phe Gln  
 340 345 350  
 Asn Cys Asn Phe Asn Leu Ser Ser Leu Leu Arg Tyr Val Gln Ala Glu  
 355 360 365  
 Ser Leu Phe Cys Asn Asn Ile Asp Ala Ser Lys Val Tyr Gly Arg Cys  
 370 375 380  
 Phe Gly Ser Ile Ser Val Asp Lys Phe Ala Val Pro Arg Ser Arg Gln  
 385 390 395 400  
 Val Asp Leu Gln Leu Gly Asn Ser Gly Phe Leu Gln Thr Ala Asn Tyr  
 405 410 415  
 Lys Ile Asp Thr Ala Ala Thr Ser Cys Gln Leu His Tyr Thr Leu Pro  
 420 425 430  
 Lys Asn Asn Val Thr Ile Asn Asn His Asn Pro Ser Ser Trp Asn Arg  
 435 440 445  
 Arg Tyr Gly Phe Asn Asp Ala Gly Val Phe Gly Lys Asn Gln His Asp  
 450 455 460  
 Val Val Tyr Ala Gln Gln Cys Phe Thr Val Arg Ser Ser Tyr Cys Pro  
 465 470 475 480  
 Cys Ala Gln Pro Asp Ile Val Ser Pro Cys Thr Thr Gln Thr Lys Pro  
 485 490 495  
 Lys Ser Ala Phe Val Asn Val Gly Asp His Cys Glu Gly Leu Gly Val  
 500 505 510  
 Leu Glu Asp Asn Cys Gly Asn Ala Asp Pro His Lys Gly Cys Ile Cys  
 515 520 525  
 Ala Asn Asn Ser Phe Ile Gly Trp Ser His Asp Thr Cys Leu Val Asn  
 530 535 540  
 Asp Arg Cys Gln Ile Phe Ala Asn Ile Leu Leu Asn Gly Ile Asn Ser  
 545 550 555 560

SEQLIST-20480.TXT

Gly Thr Thr Cys Ser Thr Asp Leu Gln Leu Pro Asn Thr Glu Val Val  
565 570 575

Thr Gly Ile Cys Val Lys Tyr Asp Leu Tyr Gly Ile Thr Gly Gln Gly  
580 585 590

Val Phe Lys Glu Val Lys Ala Asp Tyr Tyr Asn Ser Trp Gln Thr Leu  
595 600 605

Leu Tyr Asp Val Asn Gly Asn Leu Asn Gly Phe Arg Asp Leu Thr Thr  
610 615 620

Asn Lys Thr Tyr Thr Ile Arg Ser Cys Tyr Ser Gly Arg Val Ser Ala  
625 630 635 640

Ala Phe His Lys Asp Ala Pro Glu Pro Ala Leu Leu Tyr Arg Asn Ile  
645 650 655

Asn Cys Ser Tyr Val Phe Ser Asn Asn Ile Ser Arg Glu Glu Asn Pro  
660 665 670

Leu Asn Tyr Phe Asp Ser Tyr Leu Gly Cys Val Val Asn Ala Asp Asn  
675 680 685

Arg Thr Asp Glu Ala Leu Pro Asn Cys Asp Leu Arg Met Gly Ala Gly  
690 695 700

Leu Cys Val Asp Tyr Ser Lys Ser Arg Arg Ala Asp Arg Ser Val Ser  
705 710 715 720

Thr Gly Tyr Arg Leu Thr Thr Phe Glu Pro Tyr Thr Pro Met Leu Val  
725 730 735

Asn Asp Ser Val Gln Ser Val Asp Gly Leu Tyr Glu Met Gln Ile Pro  
740 745 750

Thr Asn Phe Thr Ile Gly His His Glu Glu Phe Ile Gln Thr Arg Ser  
755 760 765

Pro Lys Val Thr Ile Asp Cys Ala Ala Phe Val Cys Gly Asp Asn Thr  
770 775 780

Ala Cys Arg Gln Gln Leu Val Glu Tyr Gly Ser Phe Cys Val Asn Val  
785 790 795 800

Asn Ala Ile Leu Asn Glu Val Asn Asn Leu Leu Asp Asn Met Gln Leu  
805 810 815

Gln Val Ala Ser Ala Leu Met Gln Gly Val Thr Ile Ser Ser Arg Leu  
820 825 830

Pro Asp Gly Ile Ser Gly Pro Ile Asp Asp Ile Asn Phe Ser Pro Leu  
835 840 845

Leu Gly Cys Ile Gly Ser Thr Cys Ala Glu Asp Gly Asn Gly Pro Ser  
850 855 860

Ala Ile Arg Gly Arg Ser Ala Ile Glu Asp Leu Leu Phe Asp Lys Val  
865 870 875 880

Lys Leu Ser Asp Val Gly Phe Val Glu Ala Tyr Asn Asn Cys Thr Gly  
885 890 895

SEQLIST-20480.TXT

Gly Gln Glu Val Arg Asp Leu Leu Cys Val Gln Ser Phe Asn Gly Ile  
900 905 910

Lys Val Leu Pro Pro Val Leu Ser Glu Ser Gln Ile Ser Gly Tyr Thr  
915 920 925

Thr Gly Ala Thr Ala Ala Ala Met Phe Pro Pro Trp Ser Ala Ala Ala  
930 935 940

Gly Val Pro Phe Ser Leu Ser Val Gln Tyr Arg Ile Asn Gly Leu Gly  
945 950 955 960

Val Thr Met Asn Val Leu Ser Glu Asn Gln Lys Met Ile Ala Ser Ala  
965 970 975

Phe Asn Asn Ala Leu Gly Ala Ile Gln Asp Gly Phe Asp Ala Thr Asn  
980 985 990

Ser Ala Leu Gly Lys Ile Gln Ser Val Val Asn Ala Asn Ala Glu Ala  
995 1000 1005

Leu Asn Asn Leu Leu Asn Gln Leu Ser Asn Arg Phe Gly Ala Ile Ser  
1010 1015 1020

Ala Ser Leu Gln Glu Ile Leu Thr Arg Leu Glu Ala Val Glu Ala Lys  
1025 1030 1035 1040

Ala Gln Ile Asp Arg Leu Ile Asn Gly Arg Leu Thr Ala Leu Asn Ala  
1045 1050 1055

Tyr Ile Ser Lys Gln Leu Ser Asp Ser Thr Leu Ile Lys Val Ser Ala  
1060 1065 1070

Ala Gln Ala Ile Glu Lys Val Asn Glu Cys Val Lys Ser Gln Thr Thr  
1075 1080 1085

Arg Ile Asn Phe Cys Gly Asn Gly Asn His Ile Leu Ser Leu Val Gln  
1090 1095 1100

Asn Ala Pro Tyr Gly Leu Tyr Phe Ile His Phe Ser Tyr Val Pro Ile  
1105 1110 1115 1120

Ser Phe Thr Thr Ala Asn Val Ser Pro Gly Leu Cys Ile Ser Gly Asp  
1125 1130 1135

Arg Gly Leu Ala Pro Lys Ala Gly Tyr Phe Val Gln Asp Asp Gly Glu  
1140 1145 1150

Trp Lys Phe Thr Gly Ser Ser Tyr Tyr Tyr Pro Glu Pro Ile Thr Asp  
1155 1160 1165

Lys Asn Ser Val Ile Met Ser Ser Cys Ala Val Asn Tyr Thr Lys Ala  
1170 1175 1180

Pro Glu Val Phe Leu Asn Thr Ser Ile Pro Asn Pro Pro Asp Phe Lys  
1185 1190 1195 1200

Glu Glu Leu Asp Lys Trp Phe Lys Asn Gln Thr Ser Ile Ala Pro Asp  
1205 1210 1215

Leu Ser Leu Asp Phe Glu Lys Leu Asn Val Thr Leu Leu Asp Leu Thr  
1220 1225 1230

SEQLIST-20480.TXT

Tyr Glu Met Asn Arg Ile Gln Asp Ala Ile Lys Lys Leu Asn Glu Ser  
1235 1240 1245

Tyr Ile Asn Leu Lys Glu Val Gly Thr Tyr Glu Met Tyr Val Lys Trp  
1250 1255 1260

Pro Trp Tyr Val Trp Leu Leu Ile Gly Leu Ala Gly Val Ala Val Cys  
1265 1270 1275 1280

Val Leu Leu Phe Phe Ile Cys Cys Cys Thr Gly Cys Gly Ser Cys Cys  
1285 1290 1295

Phe Lys Lys Cys Gly Asn Cys Cys Asp Glu Tyr Gly Gly His Gln Asp  
1300 1305 1310

Ser Ile Val Ile His Asn Ile Ser Ser His Glu Asp  
1315 1320

<210> 6070  
<211> 228  
<212> PRT  
<213> Murine hepatitis virus

<400> 6070  
Met Ser Ser Thr Thr Gln Ala Pro Glu Pro Val Tyr Gln Trp Thr Ala  
1 5 10 15

Asp Glu Ala Val Gln Phe Leu Lys Glu Trp Asn Phe Ser Leu Gly Ile  
20 25 30

Ile Leu Leu Phe Ile Thr Ile Ile Leu Gln Phe Gly Tyr Thr Ser Arg  
35 40 45

Ser Met Phe Ile Tyr Val Val Lys Met Ile Ile Leu Trp Leu Met Trp  
50 55 60

Pro Leu Thr Ile Val Leu Cys Ile Phe Asn Cys Val Tyr Ala Leu Asn  
65 70 75 80

Asn Val Tyr Leu Gly Phe Ser Ile Val Phe Thr Ile Val Ser Ile Val  
85 90 95

Ile Trp Ile Met Tyr Phe Val Asn Ser Ile Arg Leu Phe Ile Arg Thr  
100 105 110

Gly Ser Trp Trp Ser Phe Asn Pro Glu Thr Asn Asn Leu Met Cys Ile  
115 120 125

Asp Met Lys Gly Thr Val Tyr Val Arg Pro Ile Ile Glu Asp Tyr His  
130 135 140

Thr Leu Thr Ala Thr Ile Ile Arg Gly His Leu Tyr Met Gln Gly Val  
145 150 155 160

Lys Leu Gly Thr Gly Phe Ser Leu Ser Asp Leu Pro Ala Tyr Val Thr  
165 170 175

Val Ala Lys Val Ser His Leu Cys Thr Tyr Lys Arg Ala Phe Leu Asp  
180 185 190

Lys Val Asp Gly Val Ser Gly Phe Ala Val Tyr Val Lys Ser Lys Val  
195 200 205

SEQLIST-20480.TXT

Gly Asn Tyr Arg Leu Pro Ser Asn Lys Pro Ser Gly Ala Asp Thr Ala  
210 215 220

Leu Leu Arg Ile  
225

<210> 6071  
<211> 454  
<212> PRT  
<213> Murine hepatitis virus

<400> 6071  
Met Ser Phe Val Pro Gly Gln Glu Asn Ala Gly Gly Arg Ser Ser Ser  
1 5 10 15

Val Asn Arg Ala Gly Asn Gly Ile Leu Lys Lys Thr Thr Trp Ala Asp  
20 25 30

Gln Thr Glu Arg Gly Pro Asn Asn Gln Asn Arg Gly Arg Arg Asn Gln  
35 40 45

Pro Lys Gln Thr Ala Thr Thr Gln Pro Asn Ser Gly Ser Val Val Pro  
50 55 60

His Tyr Ser Trp Phe Ser Gly Ile Thr Gln Phe Gln Lys Gly Lys Glu  
65 70 75 80

Phe Gln Phe Ala Glu Gly Gln Gly Val Pro Ile Ala Asn Gly Ile Pro  
85 90 95

Ala Ser Glu Gln Lys Gly Tyr Trp Tyr Arg His Asn Arg Arg Ser Phe  
100 105 110

Lys Thr Pro Asp Gly Gln Gln Lys Gln Leu Leu Pro Arg Trp Tyr Phe  
115 120 125

Tyr Tyr Leu Gly Thr Gly Pro His Ala Gly Ala Ser Tyr Gly Asp Ser  
130 135 140

Ile Glu Gly Val Phe Trp Val Ala Asn Ser Gln Ala Asp Thr Asn Thr  
145 150 155 160

Arg Ser Asp Ile Val Glu Arg Asp Pro Ser Ser His Glu Ala Ile Pro  
165 170 175

Thr Arg Phe Ala Pro Gly Thr Val Leu Pro Gln Gly Phe Tyr Val Glu  
180 185 190

Gly Ser Gly Arg Ser Ala Pro Ala Ser Arg Ser Gly Ser Arg Ser Gln  
195 200 205

Ser Arg Gly Pro Asn Asn Arg Ala Arg Ser Ser Ser Asn Gln Arg Gln  
210 215 220

Pro Ala Ser Thr Val Lys Pro Asp Met Ala Glu Glu Ile Ala Ala Leu  
225 230 235 240

Val Leu Ala Lys Leu Gly Lys Asp Ala Gly Gln Pro Lys Gln Val Thr  
245 250 255

Lys Gln Ser Ala Lys Glu Val Arg Gln Lys Ile Leu Asn Lys Pro Arg  
260 265 270

SEQLIST-20480.TXT

Gln Lys Arg Thr Pro Asn Lys Gln Cys Pro Val Gln Gln Cys Phe Gly  
 275 280 285  
 Lys Arg Gly Pro Asn Gln Asn Phe Gly Gly Ser Glu Met Leu Lys Leu  
 290 295 300  
 Gly Thr Ser Asp Pro Gln Phe Pro Ile Leu Ala Glu Leu Ala Pro Thr  
 305 310 315 320  
 Val Gly Ala Phe Phe Phe Gly Ser Lys Leu Glu Leu Val Lys Lys Asn  
 325 330 335  
 Ser Gly Gly Ala Asp Glu Pro Thr Lys Asp Val Tyr Glu Leu Gln Tyr  
 340 345 350  
 Ser Gly Ala Val Arg Phe Asp Ser Thr Leu Pro Gly Phe Glu Thr Ile  
 355 360 365  
 Met Lys Val Leu Asn Glu Asn Leu Asn Ala Tyr Gln Lys Asp Gly Gly  
 370 375 380  
 Ala Asp Val Val Ser Pro Lys Pro Gln Arg Lys Gly Arg Arg Gln Ala  
 385 390 395 400  
 Gln Glu Lys Lys Asp Glu Val Asp Asn Val Ser Val Ala Lys Pro Lys  
 405 410 415  
 Ser Ser Val Gln Arg Asn Val Ser Arg Glu Leu Thr Pro Glu Asp Arg  
 420 425 430  
 Ser Leu Leu Ala Gln Ile Leu Asp Asp Gly Val Val Pro Asp Gly Leu  
 435 440 445  
 Glu Asp Asp Ser Asn Val  
 450

<210> 6072  
 <211> 1162  
 <212> PRT  
 <213> Avian infectious bronchitis virus

<400> 6072

Met Leu Val Thr Pro Leu Leu Leu Val Thr Leu Leu Cys Ala Leu Cys  
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 Ser Ala Val Leu Tyr Asp Ser Ser Ser Tyr Val Tyr Tyr Tyr Gln Ser  
 20 25 30  
 Ala Phe Arg Pro Pro Ser Gly Trp His Leu Gln Gly Gly Ala Tyr Ala  
 35 40 45  
 Val Val Asn Ile Ser Ser Glu Phe Asn Asn Ala Gly Ser Ser Ser Gly  
 50 55 60  
 Cys Thr Val Gly Ile Ile His Gly Gly Arg Val Val Asn Ala Ser Ser  
 65 70 75 80  
 Ile Ala Met Thr Ala Pro Ser Ser Gly Met Ala Trp Ser Ser Ser Gln  
 85 90 95  
 Phe Cys Thr Ala His Cys Asn Phe Ser Asp Thr Thr Val Phe Val Thr  
 100 105 110

SEQLIST-20480.TXT

His Cys Tyr Lys His Gly Gly Cys Pro Leu Thr Gly Met Leu Gln Gln  
 115 120 125  
 Asn Leu Ile Arg Val Ser Ala Met Lys Asn Gly Gln Leu Phe Tyr Asn  
 130 135 140  
 Leu Thr Val Ser Val Ala Lys Tyr Pro Thr Phe Arg Ser Phe Gln Cys  
 145 150 155 160  
 Val Asn Asn Leu Thr Ser Val Tyr Leu Asn Gly Asp Leu Val Tyr Thr  
 165 170 175  
 Ser Asn Glu Thr Ile Asp Val Thr Ser Ala Gly Val Tyr Phe Lys Ala  
 180 185 190  
 Gly Gly Pro Ile Thr Tyr Lys Val Met Arg Glu Val Lys Ala Leu Ala  
 195 200 205  
 Tyr Phe Val Asn Gly Thr Ala Gln Asp Val Ile Leu Cys Asp Gly Ser  
 210 215 220  
 Pro Arg Gly Leu Leu Ala Cys Gln Tyr Asn Thr Gly Asn Phe Ser Asp  
 225 230 235 240  
 Gly Phe Tyr Pro Phe Thr Asn Ser Ser Leu Val Lys Gln Lys Phe Ile  
 245 250 255  
 Val Tyr Arg Glu Asn Ser Val Asn Thr Thr Cys Thr Leu His Asn Phe  
 260 265 270  
 Ile Phe His Asn Glu Thr Gly Ala Asn Pro Asn Pro Ser Gly Val Gln  
 275 280 285  
 Asn Ile Gln Thr Tyr Gln Thr Lys Thr Ala Gln Ser Gly Tyr Tyr Asn  
 290 295 300  
 Phe Asn Phe Ser Phe Leu Ser Ser Phe Val Tyr Lys Glu Ser Asn Phe  
 305 310 315 320  
 Met Tyr Gly Ser Tyr His Pro Ser Cys Lys Phe Arg Leu Glu Thr Ile  
 325 330 335  
 Asn Asn Gly Leu Trp Phe Asn Ser Leu Ser Val Ser Ile Ala Tyr Gly  
 340 345 350  
 Pro Leu Gln Gly Gly Cys Lys Gln Ser Val Phe Lys Gly Arg Ala Thr  
 355 360 365  
 Cys Cys Tyr Ala Tyr Ser Tyr Gly Gly Pro Ser Leu Cys Lys Gly Val  
 370 375 380  
 Tyr Ser Gly Glu Leu Asp His Asn Phe Glu Cys Gly Leu Leu Val Tyr  
 385 390 395 400  
 Val Thr Lys Ser Gly Gly Ser Arg Ile Gln Thr Ala Thr Glu Pro Pro  
 405 410 415  
 Val Ile Thr Gln Asn Asn Tyr Asn Asn Ile Thr Leu Asn Thr Cys Val  
 420 425 430  
 Asp Tyr Asn Ile Tyr Gly Arg Thr Gly Gln Gly Phe Ile Thr Asn Val  
 435 440 445



SEQLIST-20480.TXT

Thr Asp Ser Ala Val Ser Tyr Asn Tyr Leu Ala Asp Ala Gly Leu Ala  
 450 455 460  
 Ile Leu Asp Thr Ser Gly Ser Ile Asp Ile Phe Val Val Gln Gly Glu  
 465 470 475  
 Tyr Gly Leu Asn Tyr Tyr Lys Val Asn Pro Cys Glu Asp Val Asn Gln  
 485 490 495  
 Gln Phe Val Val Ser Gly Gly Lys Leu Val Gly Ile Leu Thr Ser Arg  
 500 505 510  
 Asn Glu Thr Gly Ser Gln Leu Leu Glu Asn Gln Phe Tyr Ile Lys Ile  
 515 520 525  
 Thr Asn Gly Thr Arg Arg Phe Arg Arg Ser Ile Thr Glu Asn Val Ala  
 530 535 540  
 Asn Cys Pro Tyr Val Ser Tyr Gly Lys Phe Cys Ile Lys Pro Asp Gly  
 545 550 555 560  
 Ser Ile Ala Thr Ile Val Pro Lys Gln Leu Glu Gln Phe Val Ala Pro  
 565 570 575  
 Leu Phe Asn Val Thr Glu Asn Val Leu Ile Pro Asn Ser Phe Asn Leu  
 580 585 590  
 Thr Val Thr Asp Glu Tyr Ile Gln Thr Arg Met Asp Lys Val Gln Ile  
 595 600 605  
 Asn Cys Leu Gln Tyr Val Cys Gly Ser Ser Leu Asp Cys Arg Lys Leu  
 610 615 620  
 Phe Gln Gln Tyr Gly Pro Val Cys Asp Asn Ile Leu Ser Val Val Asn  
 625 630 635 640  
 Ser Val Gly Gln Lys Glu Asp Met Glu Leu Leu Asn Phe Tyr Ser Ser  
 645 650 655  
 Thr Lys Pro Ala Gly Phe Asn Thr Pro Val Leu Ser Asn Val Ser Thr  
 660 665 670  
 Gly Glu Phe Asn Ile Ser Leu Leu Leu Thr Asn Pro Ser Ser Arg Arg  
 675 680 685  
 Lys Arg Ser Leu Ile Glu Asp Leu Leu Phe Thr Ser Val Glu Ser Val  
 690 695 700  
 Gly Leu Pro Thr Asn Asp Ala Tyr Lys Asn Cys Thr Ala Gly Pro Leu  
 705 710 715 720  
 Gly Phe Phe Lys Asp Leu Ala Cys Ala Arg Glu Tyr Asn Gly Leu Leu  
 725 730 735  
 Val Leu Pro Pro Ile Ile Thr Ala Glu Met Gln Ala Leu Tyr Thr Ser  
 740 745 750  
 Ser Leu Val Ala Ser Met Ala Phe Gly Gly Ile Thr Ala Ala Gly Ala  
 755 760 765  
 Ile Pro Phe Ala Thr Gln Leu Gln Ala Arg Ile Asn His Leu Gly Ile  
 770 775 780

SEQLIST-20480.TXT

Thr 785 Gln Ser Leu Leu 790 Leu Lys Asn Gln Glu Lys 795 Ile Ala Ala Ser Phe 800  
 Asn Lys Ala Ile 805 Gly His Met Gln Glu Gly 810 Phe Arg Ser Thr Ser 815 Leu  
 Ala Leu Gln Gln 820 Ile Gln Asp Val Val 825 Ser Lys Gln Ser Ala 830 Ile Leu  
 Thr Glu Thr 835 Met Ala Ser Leu Asn 840 Lys Asn Phe Gly Ala 845 Ile Ser Ser  
 Val Ile 850 Gln Glu Ile Tyr Gln 855 Gln Phe Asp Ala Ile 860 Gln Ala Asn Ala  
 Gln 865 Val Asp Arg Leu Ile 870 Thr Gly Arg Leu Ser 875 Ser Leu Ser Val Leu 880  
 Ala Ser Ala Lys Gln 885 Ala Glu Tyr Ile Arg 890 Val Ser Gln Gln Arg 895 Glu  
 Leu Ala Thr Gln 900 Lys Ile Asn Glu Cys 905 Val Lys Ser Gln Ser 910 Ile Arg  
 Tyr Ser Phe 915 Cys Gly Asn Gly Arg 920 His Val Leu Thr Ile 925 Pro Gln Asn  
 Ala Pro 930 Asn Gly Ile Val Phe 935 Ile His Phe Ser Tyr 940 Thr Pro Asp Ser  
 Phe 945 Val Asn Val Thr Ala 950 Ile Val Gly Phe Cys 955 Val Lys Pro Ala Asn 960  
 Ala Ser Gln Tyr Ala 965 Ile Val Pro Ala Asn 970 Gly Arg Gly Ile Phe 975 Ile  
 Gln Val Asn Gly 980 Ser Tyr Tyr Ile Thr 985 Ala Arg Asp Met Tyr 990 Met Pro  
 Arg Ala Ile 995 Thr Ala Gly Asp Val 1000 Val Thr Leu Thr Ser 1005 Cys Gln Ala  
 Asn Tyr Val 1010 Ser Val Asn Lys 1015 Thr Val Ile Thr Thr 1020 Phe Val Asp Asn  
 Asp 1025 Asp Phe Asp Phe Asn 1030 Asp Glu Leu Ser Lys 1035 Trp Trp Asn Asp Thr 1040  
 Lys His Glu Leu 1045 Pro Asp Phe Asp Lys Phe 1050 Asn Tyr Thr Val Pro Ile 1055  
 Leu Asp Ile Asp 1060 Ser Glu Ile Asp Arg 1065 Ile Gln Gly Val Ile 1070 Gln Gly  
 Leu Asn Asp 1075 Ser Leu Ile Asp Leu 1080 Glu Lys Leu Ser Ile 1085 Leu Lys Thr  
 Tyr Ile 1090 Lys Trp Pro Trp Tyr 1095 Val Trp Leu Ala Ile 1100 Ala Phe Ala Thr  
 Ile 1105 Ile Phe Ile Leu Ile 1110 Leu Gly Trp Val Phe 1115 Phe Met Thr Gly Cys 1120

SEQLIST-20480.TXT

Cys Gly Cys Cys Cys Gly Cys Phe Gly Ile Met Pro Leu Met Ser Lys  
1125 1130 1135

Cys Gly Lys Lys Ser Ser Tyr Tyr Thr Thr Phe Asp Asn Asp Val Val  
1140 1145 1150

Thr Glu Gln Tyr Arg Pro Lys Lys Ser Val  
1155 1160

<210> 6073  
<211> 108  
<212> PRT  
<213> Avian infectious bronchitis virus

<400> 6073  
Met Asn Leu Leu Asn Lys Ser Leu Glu Glu Asn Gly Ser Phe Leu Thr  
1 5 10 15

Ala Leu Tyr Ile Ile Val Gly Phe Leu Ala Leu Tyr Leu Leu Gly Arg  
20 25 30

Ala Leu Gln Ala Phe Val Gln Ala Ala Asp Ala Cys Cys Leu Phe Trp  
35 40 45

Tyr Thr Trp Val Val Ile Pro Gly Ala Lys Gly Thr Ala Phe Val Tyr  
50 55 60

Lys Tyr Thr Tyr Gly Arg Lys Leu Asn Asn Pro Glu Leu Glu Ala Val  
65 70 75 80

Ile Val Asn Glu Phe Pro Lys Asn Gly Trp Asn Asn Lys Asn Pro Ala  
85 90 95

Asn Phe Gln Asp Ala Gln Arg Asp Lys Leu Tyr Ser  
100 105

<210> 6074  
<211> 225  
<212> PRT  
<213> Avian infectious bronchitis virus

<400> 6074  
Met Pro Asn Glu Thr Asn Cys Thr Leu Asp Phe Glu Gln Ser Val Gln  
1 5 10 15

Leu Phe Lys Glu Tyr Asn Leu Phe Ile Thr Ala Phe Leu Leu Phe Leu  
20 25 30

Thr Ile Ile Leu Gln Tyr Gly Tyr Ala Thr Arg Ser Lys Val Ile Tyr  
35 40 45

Thr Leu Lys Met Ile Val Leu Trp Cys Phe Trp Pro Leu Asn Ile Ala  
50 55 60

Val Gly Val Ile Ser Cys Thr Tyr Pro Pro Asn Thr Gly Gly Leu Val  
65 70 75 80

Ala Ala Ile Ile Leu Thr Val Phe Ala Cys Leu Ser Phe Val Gly Tyr  
85 90 95

Trp Ile Gln Ser Ile Arg Leu Phe Lys Arg Cys Arg Ser Trp Trp Ser  
100 105 110

SEQLIST-20480.TXT

Phe Asn Pro Glu Ser Asn Ala Val Gly Ser Ile Leu Leu Thr Asn Gly  
 115 120 125  
 Gln Gln Cys Asn Phe Ala Ile Glu Ser Val Pro Met Val Leu Ser Pro  
 130 135 140  
 Ile Ile Lys Asn Gly Val Leu Tyr Cys Glu Gly Gln Trp Leu Ala Lys  
 145 150 155 160  
 Cys Glu Pro Asp His Leu Pro Lys Asp Ile Phe Val Cys Thr Pro Asp  
 165 170 175  
 Arg Arg Asn Ile Tyr Arg Met Val Gln Lys Tyr Thr Gly Asp Gln Ser  
 180 185 190  
 Gly Asn Lys Lys Arg Phe Ala Thr Phe Val Tyr Ala Lys Gln Ser Val  
 195 200 205  
 Asp Thr Gly Glu Leu Glu Ser Val Ala Thr Gly Gly Ser Ser Leu Tyr  
 210 215 220  
 Thr  
 225

<210> 6075  
 <211> 409  
 <212> PRT  
 <213> Avian infectious bronchitis virus

<400> 6075  
 Met Ala Ser Gly Lys Ala Ala Gly Lys Thr Asp Ala Pro Ala Pro Val  
 1 5 10 15  
 Ile Lys Leu Gly Gly Pro Lys Pro Pro Lys Val Gly Ser Ser Gly Asn  
 20 25 30  
 Ala Ser Trp Phe Gln Ala Ile Lys Ala Lys Lys Leu Asn Thr Pro Pro  
 35 40 45  
 Pro Lys Phe Glu Gly Ser Gly Val Pro Asp Asn Glu Asn Ile Lys Pro  
 50 55 60  
 Ser Gln Gln His Gly Tyr Trp Arg Arg Gln Ala Arg Phe Lys Pro Gly  
 65 70 75 80  
 Lys Gly Gly Arg Lys Pro Val Pro Asp Ala Trp Tyr Phe Tyr Tyr Thr  
 85 90 95  
 Gly Thr Gly Pro Ala Ala Asp Leu Asn Trp Gly Asp Thr Gln Asp Gly  
 100 105 110  
 Ile Val Trp Val Ala Ala Lys Gly Ala Asp Thr Lys Ser Arg Ser Asn  
 115 120 125  
 Gln Gly Thr Arg Asp Pro Asp Lys Phe Asp Gln Tyr Pro Leu Arg Phe  
 130 135 140  
 Ser Asp Gly Gly Pro Asp Gly Asn Phe Arg Trp Asp Phe Ile Pro Leu  
 145 150 155 160  
 Asn Arg Gly Arg Ser Gly Arg Ser Thr Ala Ala Ser Ser Ala Ala Ala  
 165 170 175

SEQLIST-20480.TXT

Ser Arg Ala Pro Ser Arg Glu Gly Ser Arg Gly Arg Arg Ser Asp Ser  
180 185 190  
Gly Asp Asp Leu Ile Ala Arg Ala Lys Ile Ile Gln Asp Gln Gln  
195 200 205  
Lys Lys Gly Ser Arg Ile Thr Lys Ala Lys Ala Asp Glu Met Ala His  
210 215 220  
Arg Arg Tyr Cys Lys Arg Thr Ile Pro Pro Asn Tyr Arg Val Asp Gln  
225 230 235 240  
Val Phe Gly Pro Arg Thr Lys Gly Lys Glu Gly Asn Phe Gly Asp Asp  
245 250 255  
Lys Met Asn Glu Glu Gly Ile Lys Asp Gly Arg Val Thr Ala Met Leu  
260 265 270  
Asn Leu Val Pro Ser Ser His Ala Cys Leu Phe Gly Ser Arg Val Thr  
275 280 285  
Pro Lys Leu Gln Leu Asp Gly Leu His Leu Arg Phe Glu Phe Thr Thr  
290 295 300  
Val Val Pro Cys Asp Asp Pro Gln Phe Asp Asn Tyr Val Lys Ile Cys  
305 310 315 320  
Asp Gln Cys Val Asp Gly Val Gly Thr Arg Pro Lys Asp Asp Glu Pro  
325 330 335  
Lys Pro Lys Ser Arg Ser Ser Ser Arg Pro Ala Thr Arg Gly Asn Ser  
340 345 350  
Pro Ala Pro Arg Gln Gln Arg Pro Lys Lys Glu Lys Lys Leu Lys Lys  
355 360 365  
Gln Asp Asp Glu Ala Asp Lys Ala Leu Thr Ser Asp Glu Glu Arg Asn  
370 375 380  
Asn Ala Gln Leu Glu Phe Tyr Asp Glu Pro Lys Val Ile Asn Trp Gly  
385 390 395 400  
Asp Ala Ala Leu Gly Glu Asn Glu Leu  
405

<210> 6076  
<211> 19  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Primer

<400> 6076  
ctacccagga aaagccaac

19

<210> 6077  
<211> 21  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Primer

SEQLIST-20480.TXT

<400>	6077	
gagtaactcg tccctcttct g		21
<210>	6078	
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<220>		
<223>	Primer	
<400>	6078	
caactcagtt tgcctgtcc		19
<210>	6079	
<211>	22	
<212>	DNA	
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gcataccgca atgttcttct tc		22
<210>	6080	
<211>	22	
<212>	DNA	
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<400>	6080	
gaacaaaact ggaacactaa gc		22
<210>	6081	
<211>	25	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
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<400>	6081	
cactctttcc gaacaacttg attac		25
<210>	6082	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Primer	
<400>	6082	
tgataagagc tacgagcacc		20
<210>	6083	
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<212>	DNA	
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SEQLIST-20480.TXT

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<220>
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<400>    6083
tgtaccctgt tgcattctcc                                19

<210>    6084
<211>    22
<212>    DNA
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<220>
<223>    Primer

<400>    6084
tcaaacattg aaactcgact cc                                22

<210>    6085
<211>    23
<212>    DNA
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<220>
<223>    Primer

<400>    6085
ctttctctgc ttctacaagt gcc                                23

<210>    6086
<211>    25
<212>    DNA
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<220>
<223>    Primer

<400>    6086
gtctttcaaa accattggtg agtcc                                25

<210>    6087
<211>    19
<212>    DNA
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<220>
<223>    Primer

<400>    6087
tacttcagac ctgctcacc                                19

<210>    6088
<211>    20
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<213>    Artificial Sequence

<220>
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<400>    6088
cgtcaagggt caaatacagg                                20

<210>    6089

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<211> 19
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<213> Artificial Sequence

<220>
<223> Primer

<400> 6089
ctgcaactac tcatgcctc 19

<210> 6090
<211> 22
<212> DNA
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<220>
<223> Primer

<400> 6090
ttgggaagtt caaggttaca ag 22

<210> 6091
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 6091
ctctgtctac actgttgaat cc 22

<210> 6092
<211> 25
<212> DNA
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<220>
<223> Primer

<400> 6092
cgtatgtatt gttcctttta ccctc 25

<210> 6093
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 6093
agaacctaca cctgaagaac c 21

<210> 6094
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 6094

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cattaagcta aatggccctc ttac	SEQLIST-20480.TXT	24
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<211> 22		
<212> DNA		
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tcacaggaca tcttacttgc ac		22
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ctttccttga gaaggatgca c		21
<210> 6097		
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gttgatgagt atataaccac gtacc		25
<210> 6098		
<211> 22		
<212> DNA		
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<223> Primer		
<400> 6098		
gccataatgg caaccatcca ac		22
<210> 6099		
<211> 21		
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<400> 6099		
gctgaactct ctaaagagc c		21
<210> 6100		
<211> 20		
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<223>    Primer
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caaagacatc tgaggagcac                20
<210>    6101
<211>    21
<212>    DNA
<213>    Artificial Sequence

<220>
<223>    Primer
<400>    6101
ggacaacact aatctccaca c              21
<210>    6102
<211>    22
<212>    DNA
<213>    Artificial Sequence

<220>
<223>    Primer
<400>    6102
gaagtcaaat tcaatgcacc ag            22
<210>    6103
<211>    24
<212>    DNA
<213>    Artificial Sequence

<220>
<223>    Primer
<400>    6103
gagaaactat gacccatctt ctac          24
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<211>    20
<212>    DNA
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<220>
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gttatgatgt ctgcaccacc                20
<210>    6105
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<220>
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<400>    6105
gctatctgtc acattcttcc c             21
<210>    6106
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<212>    DNA

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<213> Artificial Sequence
<220>
<223> Primer

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gaagacacac aaggaatgga c 21

<210> 6107
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<220>
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<400> 6107
ggattttctgt gaaggttctt ttcc 24

<210> 6108
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<220>
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<400> 6108
tcatcagcaa ttcttggtc 20

<210> 6109
<211> 20
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<220>
<223> Primer

<400> 6109
gctataagcg caatcgtgcc 20

<210> 6110
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<220>
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<400> 6110
agaccaatca accctactga c 21

<210> 6111
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<220>
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<400> 6111
tccgctctcc cattttgtc 19

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<210> 6112  
 <211> 23  
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<220>  
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<400> 6112  
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<210> 6113  
 <211> 19  
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<220>  
 <223> Primer

<400> 6113  
 gcacttggtg ctacagctc 19

<210> 6114  
 <211> 24  
 <212> DNA  
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<220>  
 <223> Primer

<400> 6114  
 ctcaaacttt cacatcactc tgac 24

<210> 6115  
 <211> 19  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Primer

<400> 6115  
 gaaaacatga cgcccagag 19

<210> 6116  
 <211> 23  
 <212> DNA  
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<220>  
 <223> Primer

<400> 6116  
 gccagtacat acattgtcaa tcc 23

<210> 6117  
 <211> 20  
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<220>  
 <223> Primer

<400>	6117	
	gctacacacc ttccaaactc	20
<210>	6118	
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	gatgcatga atctcatagc taac	24
<210>	6119	
<211>	21	
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<213>	Artificial Sequence	
<220>		
<223>	Primer	
<400>	6119	
	gtattttctct gaagcactgc c	21
<210>	6120	
<211>	19	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Primer	
<400>	6120	
	gaagggtgca tggtaacaag	19
<210>	6121	
<211>	21	
<212>	DNA	
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Lys Gly Ala Val 85	Leu Ile Leu Gln Thr 90	Ala Val Ala Asn Ala Glu Thr 95
Pro Lys Tyr 100	Lys Phe Ile Lys Ala 105	Asn Cys Gly Asp Ser Phe Thr Ile 110
Ala Cys Ala 115	Tyr Gly Gly Thr Val 120	Val Gly Leu Tyr Pro Val Thr Met 125
Arg Ser 130	Asn Gly Thr Ile Arg 135	Ala Ser Phe Leu Ala Gly Ala Cys Gly 140
Ser Val Gly 145	Phe Asn Ile Glu Lys Gly 150	Val Val Asn Phe Phe Tyr Met 155 160
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Pro Pro 195	Asp Asn Leu Val Thr 200	Asn Ile Val Ala Trp Leu Tyr Ala 205
Ala Ile 210	Ile Ser Val Lys Glu 215	Ser Ser Phe Ser Leu Pro Lys Trp Leu 220
Glu Ser Thr 225	Thr Val Ser Val Asp 230	Asp Tyr Asn Lys Trp Ala Gly Asp 235 240
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Ala Ile Thr 260	Gly Val Asp Val Cys 265	Lys Leu Leu Arg Thr Ile Met Val 270
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						Leu
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						Leu
						Trp
						Leu
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						Val
						Ile
						Cys
						Ser
						Ser
						Ala
						Asp
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						Ser
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						Leu
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						Gln
						Asn
						Pro
						95
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						Val
						Val
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						His
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 <211> 303  
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Asp Phe Thr Val Leu Phe Asp Arg Leu Ser Leu Thr Val Met Ser Tyr	65	70	75
Gln Met Gln Gly Cys Met Leu Val Leu Thr Val Thr Leu Gln Asn Ser	85	90	95
Arg Thr Pro Lys Tyr Thr Phe Gly Val Val Lys Pro Gly Glu Thr Phe	100	105	110
Thr Val Leu Ala Ala Tyr Asn Gly Lys Pro Gln Gly Ala Phe His Val	115	120	125
Thr Met Arg Ser Ser Tyr Thr Ile Lys Gly Ser Phe Leu Cys Gly Ser	130	135	140
Cys Gly Ser Val Gly Tyr Val Leu Met Gly Asp Cys Val Lys Phe Val	145	150	155
Tyr Met His Gln Leu Glu Leu Ser Thr Gly Cys His Thr Gly Thr Asp	165	170	175
Phe Asn Gly Asp Phe Tyr Gly Pro Tyr Lys Asp Ala Gln Val Val Gln	180	185	190
Leu Pro Val Gln Asp Tyr Ile Gln Ser Val Asn Phe Val Ala Trp Leu	195	200	205
Tyr Ala Ala Ile Leu Asn Asn Cys Asn Trp Phe Val Gln Ser Asp Lys	210	215	220
Cys Ser Val Glu Asp Phe Asn Val Trp Ala Leu Ser Asn Gly Phe Ser	225	230	235
Gln Val Lys Ser Asp Leu Val Ile Asp Ala Leu Ala Ser Met Thr Gly	245	250	255
Val Ser Leu Glu Thr Leu Leu Ala Ala Ile Lys Arg Leu Lys Asn Gly	260	265	270
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50      55      60
Phe Val Leu Ser Gly Arg Val Ser Leu Thr Val Met Ser Tyr Gln Met
65      70      75      80
Gln Gly Cys Leu Leu Val Leu Thr Val Thr Leu Gln Asn Pro Lys Thr
85      90      95
Pro Lys Tyr Lys Phe Gly Val Val Lys Pro Gly Glu Thr Phe Thr Val
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Leu Ala Ala Tyr Asn Gly Ser Pro Gln Gly Ala Phe His Val Thr Met
115     120     125
Arg Ser Ser His Thr Ile Lys Gly Ser Phe Leu Cys Gly Ser Cys Gly
130     135     140
Ser Val Gly Phe Val Ile Asp Gly Asp Cys Val Lys Phe Val Tyr Met
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His Gln Leu Glu Leu Ser Thr Gly Cys His Thr Gly Thr Asp Leu Gly
165     170     175
Asp Phe Tyr Gly Pro Tyr Val Asp Ala Gln Val Val Gln Leu Pro Val
180     185     190
Gln Asp Tyr Thr Gln Thr Val Asn Val Val Ala Trp Leu Tyr Ala Ala
195     200     205
Ile Ile Asn Cys Asn Trp Phe Leu Gln Ser Asp Thr Cys Ser Leu Glu
210     215     220
Asp Phe Asn Val Trp Ala Met Ser Asn Gly Phe Ser Pro Ile Lys Ser
225     230     235     240
Asp Leu Val Ile Asp Ala Leu Ala Ala Met Thr Gly Val Ser Val Glu
245     250     255
Leu Leu Ala Ala Ile Lys Arg Leu Ser Gly Phe Gln Gly Arg Gln Ile
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aatagtttgc	gcaacgttgt	tgccattgct	acagggcatcg	tgggtgtcacg	ctcgtcgttt	7560
ggtatggctt	cattcagctc	cggttcccaa	cgatcaaggc	gagttacatg	atcccccatg	7620
ttgtgcaaaa	aagcggttag	ctccttcggg	cctccgatcg	ttgtcagaag	taagttggcc	7680
gcagtgttat	cactcatggg	tatggcagca	ctgctaatt	ctcttactgt	catgccatcc	7740
gtaagatgct	tttctgtgac	tgggtgagtag	tcaaccaagt	cattctgaga	atagtgtagt	7800
cggcgaccga	gttgctcttg	cccggcgtca	atacgggata	ataccgcgcc	acatagcaga	7860



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acttttaaag	tgctcatcat	tggaaaacgt	tcttcggggc	gaaaactctc	aaggatctta	7920
ccgctgttga	gatccagttc	gatgtaaccc	actcgtgcac	ccaactgac	ttcagcatct	7980
tttactttca	ccagcgtttc	tgggtgagca	aaaacaggaa	ggcaaaatgc	cgcaaaaaag	8040
ggaataaggg	cgacacggaa	atgttgaata	ctcatactct	tcctttttca	atattattga	8100
agcattttatc	agggttattg	tctcatgagc	ggatacatat	ttgaatgtat	ttagaaaaat	8160
aaacaaatag	gggttccgcg	cacatttccc	cgaaaagtgc	cacctgacgt	ctaagaaacc	8220
attattatca	tgacattaac	ctataaaaat	aggcgtatca	cgaggccctt	tcgtc	8275

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 <213> Artificial Sequence

<220>  
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<400> 6584  
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<210> 6585  
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 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Primer

<400> 6585  
 cacgaacgtg acgaat 16

<210> 6586  
 <211> 26  
 <212> DNA  
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<220>  
 <223> Primer

<220>  
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<400> 6586  
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<210> 6587  
 <211> 20  
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<220>  
 <223> Primer

<400> 6587  
 gccggagctc tgcagaattc 20

<210> 6588  
 <211> 16  
 <212> PRT  
 <213> SARS coronavirus

<400> 6588

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Leu Pro Arg Lys Ser Gln Pro Thr Ser Ile Ser Cys Arg Ser Val Leu  
1 5 10 15

<210> 6589  
<211> 14  
<212> PRT  
<213> SARS coronavirus

<400> 6589  
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1 5 10

<210> 6590  
<211> 5  
<212> PRT  
<213> SARS coronavirus

<400> 6590  
Cys Thr Tyr Ala Val  
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<212> PRT  
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<400> 6591  
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Ser Ser Ala Asp Cys Leu Arg Phe Arg Pro Cys Cys Ser Arg Ser Ser  
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Ala Tyr Leu Gly Phe Val Arg Val  
35 40

<210> 6592  
<211> 4386  
<212> PRT  
<213> SARS coronavirus

<400> 6592  
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1 5 10 15

His Val Gln Leu Ser Leu Pro Val Leu Gln Val Arg Asp Val Leu Val  
20 25 30

Arg Gly Phe Gly Asp Ser Val Glu Glu Ala Leu Ser Glu Ala Arg Glu  
35 40 45

His Leu Lys Asn Gly Thr Cys Gly Leu Val Glu Leu Glu Lys Gly Val  
50 55 60

Leu Pro Gln Leu Glu Gln Pro Tyr Val Phe Ile Lys Arg Ser Asp Ala  
65 70 75 80

Leu Ser Thr Asn His Gly His Lys Val Val Glu Leu Val Ala Glu Met  
85 90 95

Asp Gly Ile Gln Tyr Gly Arg Ser Gly Ile Thr Leu Gly Val Leu Val  
100 105 110

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Pro His Val Gly Glu Thr Pro Ile Ala Tyr Arg Asn Val Leu Leu Arg  
115 120 125  
Lys Asn Gly Asn Lys Gly Ala Gly Gly His Ser Tyr Gly Ile Asp Leu  
130 135 140  
Lys Ser Tyr Asp Leu Gly Asp Glu Leu Gly Thr Asp Pro Ile Glu Asp  
145 150 155 160  
Tyr Glu Gln Asn Trp Asn Thr Lys His Gly Ser Gly Ala Leu Arg Glu  
165 170 175  
Leu Thr Arg Glu Leu Asn Gly Gly Ala Val Thr Arg Tyr Val Asp Asn  
180 185 190  
Asn Phe Cys Gly Pro Asp Gly Tyr Pro Leu Asp Cys Ile Lys Asp Phe  
195 200 205  
Leu Ala Arg Ala Gly Lys Ser Met Cys Thr Leu Ser Glu Gln Leu Asp  
210 215 220  
Tyr Ile Glu Ser Lys Arg Gly Val Tyr Cys Cys Arg Asp His Glu His  
225 230 235 240  
Glu Ile Ala Trp Phe Thr Glu Arg Ser Asp Lys Ser Tyr Glu His Gln  
245 250 255  
Thr Pro Phe Glu Ile Lys Ser Ala Lys Lys Phe Asp Thr Phe Lys Gly  
260 265 270  
Glu Cys Pro Lys Phe Val Phe Pro Leu Asn Ser Lys Val Lys Val Ile  
275 280 285  
Gln Pro Arg Val Glu Lys Lys Lys Thr Glu Gly Phe Met Gly Arg Ile  
290 295 300  
Arg Ser Val Tyr Pro Val Ala Ser Pro Gln Glu Cys Asn Asn Met His  
305 310 315 320  
Leu Ser Thr Leu Met Lys Cys Asn His Cys Asp Glu Val Ser Trp Gln  
325 330 335  
Thr Cys Asp Phe Leu Lys Ala Thr Cys Glu His Cys Gly Thr Glu Asn  
340 345 350  
Leu Val Ile Glu Gly Pro Thr Thr Cys Gly Tyr Leu Pro Thr Asn Ala  
355 360 365  
Val Val Lys Met Pro Cys Pro Ala Cys Gln Asp Pro Glu Ile Gly Pro  
370 375 380  
Glu His Ser Val Ala Asp Tyr His Asn His Ser Asn Ile Glu Thr Arg  
385 390 395 400  
Leu Arg Lys Gly Gly Arg Thr Arg Cys Phe Gly Gly Cys Val Phe Ala  
405 410 415  
Tyr Val Gly Cys Tyr Asn Lys Arg Ala Tyr Trp Val Pro Arg Ala Ser  
420 425 430  
Ala Asp Ile Gly Ser Gly His Thr Gly Ile Thr Gly Asp Asn Val Glu  
435 440 445

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Thr Leu Asn Glu Asp Leu Leu Glu Ile Leu Ser Arg Glu Arg Val Asn  
 450 455 460  
 Ile Asn Ile Val Gly Asp Phe His Leu Asn Glu Glu Val Ala Ile Ile  
 465 470 475 480  
 Leu Ala Ser Phe Ser Ala Ser Thr Ser Ala Phe Ile Asp Thr Ile Lys  
 485 490 495  
 Ser Leu Asp Tyr Lys Ser Phe Lys Thr Ile Val Glu Ser Cys Gly Asn  
 500 505 510  
 Tyr Lys Val Thr Lys Gly Lys Pro Val Lys Gly Ala Trp Asn Ile Gly  
 515 520 525  
 Gln Gln Arg Ser Val Leu Thr Pro Leu Cys Gly Phe Pro Ser Gln Ala  
 530 535 540  
 Ala Gly Val Ile Arg Ser Ile Phe Ala Arg Thr Leu Asp Ala Ala Asn  
 545 550 555 560  
 His Ser Ile Pro Asp Leu Gln Arg Ala Ala Val Thr Ile Leu Asp Gly  
 565 570 575  
 Ile Ser Glu Gln Ser Leu Arg Leu Val Asp Ala Met Val Tyr Thr Ser  
 580 585 590  
 Asp Leu Leu Thr Asn Ser Val Ile Ile Met Ala Tyr Val Thr Gly Gly  
 595 600 605  
 Leu Val Gln Gln Thr Ser Gln Trp Leu Ser Asn Leu Leu Gly Thr Thr  
 610 615 620  
 Val Glu Lys Leu Arg Pro Ile Phe Glu Trp Ile Glu Ala Lys Leu Ser  
 625 630 635 640  
 Ala Gly Val Glu Phe Leu Lys Asp Ala Trp Glu Ile Leu Lys Phe Leu  
 645 650 655  
 Ile Thr Gly Val Phe Asp Ile Val Lys Gly Gln Ile Gln Val Ala Ser  
 660 665 670  
 Asp Asn Ile Lys Asp Cys Val Lys Cys Phe Ile Asp Val Val Asn Lys  
 675 680 685  
 Ala Leu Glu Met Cys Ile Asp Gln Val Thr Ile Ala Gly Ala Lys Leu  
 690 695 700  
 Arg Ser Leu Asn Leu Gly Glu Val Phe Ile Ala Gln Ser Lys Gly Leu  
 705 710 715 720  
 Tyr Arg Gln Cys Ile Arg Gly Lys Glu Gln Leu Gln Leu Leu Met Pro  
 725 730 735  
 Leu Lys Ala Pro Lys Glu Val Thr Phe Leu Glu Gly Asp Ser His Asp  
 740 745 750  
 Thr Val Leu Thr Ser Glu Glu Val Val Leu Lys Asn Gly Glu Leu Glu  
 755 760 765  
 Ala Leu Glu Thr Pro Val Asp Ser Phe Thr Asn Gly Ala Ile Val Gly  
 770 775 780

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Thr 785 Pro Val Cys Val Asn 790 Gly Leu Met Leu 795 Leu Glu Ile Lys Asp Lys 800  
 Glu Gln Tyr Cys Ala 805 Leu Ser Pro Gly Leu 810 Leu Ala Thr Asn Asn Val 815  
 Phe Arg Leu Lys 820 Gly Gly Ala Pro Ile 825 Lys Gly Val Thr Phe 830 Gly Glu  
 Asp Thr Val 835 Trp Glu Val Gln Gly 840 Tyr Lys Asn Val Arg 845 Ile Thr Phe  
 Glu Leu 850 Asp Glu Arg Val Asp 855 Lys Val Leu Asn Glu 860 Lys Cys Ser Val  
 Tyr Thr Val Glu Ser Gly 870 Thr Glu Val Thr Glu 875 Phe Ala Cys Val Val 880  
 Ala Glu Ala Val Val 885 Lys Thr Leu Gln Pro 890 Val Ser Asp Leu Leu Thr 895  
 Asn Met Gly Ile 900 Asp Leu Asp Glu Trp 905 Ser Val Ala Thr Phe 910 Tyr Leu  
 Phe Asp Asp 915 Ala Gly Glu Glu Asn 920 Phe Ser Ser Arg Met 925 Tyr Cys Ser  
 Phe Tyr 930 Pro Pro Asp Glu Glu 935 Glu Glu Asp Asp Ala 940 Glu Cys Glu Glu  
 Glu 945 Glu Ile Asp Glu Thr 950 Cys Glu His Glu Tyr 955 Gly Thr Glu Asp Asp 960  
 Tyr Gln Gly Leu Pro 965 Leu Glu Phe Gly Ala 970 Ser Ala Glu Thr Val 975 Arg  
 Val Glu Glu Glu 980 Glu Glu Glu Asp Trp 985 Leu Asp Asp Thr Thr 990 Glu Gln  
 Ser Glu Ile 995 Glu Pro Glu Pro Glu 1000 Thr Pro Glu Glu 1005 Pro Val Asn  
 Gln Phe Thr Gly Tyr Leu Lys 1010 Leu Thr Asp Asn Val 1020 Ala Ile Lys Cys  
 Val Asp Ile Val Lys 1025 Glu Ala Gln Ser Ala Asn 1035 Pro Met Val Ile Val 1040  
 Asn Ala Ala Asn Ile 1045 His Leu Lys His Gly 1050 Gly Gly Val Ala Gly Ala 1055  
 Leu Asn Lys Ala Thr 1060 Asn Gly Ala Met 1065 Gln Lys Glu Ser Asp Asp Tyr  
 Ile Lys Leu 1075 Asn Gly Pro Leu Thr 1080 Val Gly Gly Ser Cys Leu Leu Ser  
 Gly His Asn Leu Ala Lys 1090 Lys Cys Leu His Val Val 1100 Gly Pro Asn Leu  
 Asn Ala Gly Glu Asp Ile 1105 Gln Leu Leu Lys Ala Ala Tyr Glu Asn Phe 1120

SEQLIST-20480.TXT

Asn Ser Gln Asp Ile Leu Leu Ala Pro Leu Leu Ser Ala Gly Ile Phe  
 1125 1130 1135  
 Gly Ala Lys Pro Leu Gln Ser Leu Gln Val Cys Val Gln Thr Val Arg  
 1140 1145 1150  
 Thr Gln Val Tyr Ile Ala Val Asn Asp Lys Ala Leu Tyr Glu Gln Val  
 1155 1160 1165  
 Val Met Asp Tyr Leu Asp Asn Leu Lys Pro Arg Val Glu Ala Pro Lys  
 1170 1175 1180  
 Gln Glu Glu Pro Pro Asn Thr Glu Asp Ser Lys Thr Glu Glu Lys Ser  
 1185 1190 1195 1200  
 Val Val Gln Lys Pro Val Asp Val Lys Pro Lys Ile Lys Ala Cys Ile  
 1205 1210 1215  
 Asp Glu Val Thr Thr Thr Leu Glu Glu Thr Lys Phe Leu Thr Asn Lys  
 1220 1225 1230  
 Leu Leu Leu Phe Ala Asp Ile Asn Gly Lys Leu Tyr His Asp Ser Gln  
 1235 1240 1245  
 Asn Met Leu Arg Gly Glu Asp Met Ser Phe Leu Glu Lys Asp Ala Pro  
 1250 1255 1260  
 Tyr Met Val Gly Asp Val Ile Thr Ser Gly Asp Ile Thr Cys Val Val  
 1265 1270 1275 1280  
 Ile Pro Ser Lys Lys Ala Gly Gly Thr Thr Glu Met Leu Ser Arg Ala  
 1285 1290 1295  
 Leu Lys Lys Val Pro Val Asp Glu Tyr Ile Thr Thr Tyr Pro Gly Gln  
 1300 1305 1310  
 Gly Cys Ala Gly Tyr Thr Leu Glu Glu Ala Lys Thr Ala Leu Lys Lys  
 1315 1320 1325  
 Cys Lys Ser Ala Phe Tyr Val Leu Pro Ser Glu Ala Pro Asn Ala Lys  
 1330 1335 1340  
 Glu Glu Ile Leu Gly Thr Val Ser Trp Asn Leu Arg Glu Met Leu Ala  
 1345 1350 1355 1360  
 His Ala Glu Glu Thr Arg Lys Leu Met Pro Ile Cys Met Asp Val Arg  
 1365 1370 1375  
 Ala Ile Met Ala Thr Ile Gln Arg Lys Tyr Lys Gly Ile Lys Ile Gln  
 1380 1385 1390  
 Glu Gly Ile Val Asp Tyr Gly Val Arg Phe Phe Phe Tyr Thr Ser Lys  
 1395 1400 1405  
 Glu Pro Val Ala Ser Ile Ile Thr Lys Leu Asn Ser Leu Asn Glu Pro  
 1410 1415 1420  
 Leu Val Thr Met Pro Ile Gly Tyr Val Thr His Gly Phe Asn Leu Glu  
 1425 1430 1435 1440  
 Glu Ala Ala Arg Cys Met Arg Ser Leu Lys Ala Pro Ala Val Val Ser  
 1445 1450 1455

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Val Ser Ser Pro Asp Ala Val Thr Thr Tyr Asn Gly Tyr Leu Thr Ser  
1460 1465 1470

Ser Ser Lys Thr Ser Glu Glu His Phe Val Glu Thr Val Ser Leu Ala  
1475 1480 1485

Gly Ser Tyr Arg Asp Trp Ser Tyr Ser Gly Gln Arg Thr Glu Leu Gly  
1490 1495 1500

Val Glu Phe Leu Lys Arg Gly Asp Lys Ile Val Tyr His Thr Leu Glu  
1505 1510 1515 1520

Ser Pro Val Glu Phe His Leu Asp Gly Glu Val Leu Ser Leu Asp Lys  
1525 1530 1535

Leu Lys Ser Leu Leu Ser Leu Arg Glu Val Lys Thr Ile Lys Val Phe  
1540 1545 1550

Thr Thr Val Asp Asn Thr Asn Leu His Thr Gln Leu Val Asp Met Ser  
1555 1560 1565

Met Thr Tyr Gly Gln Gln Phe Gly Pro Thr Tyr Leu Asp Gly Ala Asp  
1570 1575 1580

Val Thr Lys Ile Lys Pro His Val Asn His Glu Gly Lys Thr Phe Phe  
1585 1590 1595 1600

Val Leu Pro Ser Asp Asp Thr Leu Arg Ser Glu Ala Phe Glu Tyr Tyr  
1605 1610 1615

His Thr Leu Asp Glu Ser Phe Leu Gly Arg Tyr Met Ser Ala Leu Asn  
1620 1625 1630

His Thr Lys Lys Trp Lys Phe Pro Gln Val Gly Gly Leu Thr Ser Ile  
1635 1640 1645

Lys Trp Ala Asp Asn Asn Cys Tyr Leu Ser Ser Val Leu Leu Ala Leu  
1650 1655 1660

Gln Gln Leu Glu Val Lys Phe Asn Ala Pro Ala Leu Gln Glu Ala Tyr  
1665 1670 1675 1680

Tyr Arg Ala Arg Ala Gly Asp Ala Ala Asn Phe Cys Ala Leu Ile Leu  
1685 1690 1695

Ala Tyr Ser Asn Lys Thr Val Gly Glu Leu Gly Asp Val Arg Glu Thr  
1700 1705 1710

Met Thr His Leu Leu Gln His Ala Asn Leu Glu Ser Ala Lys Arg Val  
1715 1720 1725

Leu Asn Val Val Cys Lys His Cys Gly Gln Lys Thr Thr Thr Leu Thr  
1730 1735 1740

Gly Val Glu Ala Val Met Tyr Met Gly Thr Leu Ser Tyr Asp Asn Leu  
1745 1750 1755 1760

Lys Thr Gly Val Ser Ile Pro Cys Val Cys Gly Arg Asp Ala Thr Gln  
1765 1770 1775

Tyr Leu Val Gln Gln Glu Ser Ser Phe Val Met Met Ser Ala Pro Pro  
1780 1785 1790

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Ala Glu Tyr Lys Leu Gln Gln Gly Thr Phe Leu Cys Ala Asn Glu Tyr  
1795 1800 1805

Thr Gly Asn Tyr Gln Cys Gly His Tyr Thr His Ile Thr Ala Lys Glu  
1810 1815 1820

Thr Leu Tyr Arg Ile Asp Gly Ala His Leu Thr Lys Met Ser Glu Tyr  
1825 1830 1835 1840

Lys Gly Pro Val Thr Asp Val Phe Tyr Lys Glu Thr Ser Tyr Thr Thr  
1845 1850 1855

Thr Ile Lys Pro Val Ser Tyr Lys Leu Asp Gly Val Thr Tyr Thr Glu  
1860 1865 1870

Ile Glu Pro Lys Leu Asp Gly Tyr Tyr Lys Lys Asp Asn Ala Tyr Tyr  
1875 1880 1885

Thr Glu Gln Pro Ile Asp Leu Val Pro Thr Gln Pro Leu Pro Asn Ala  
1890 1895 1900

Ser Phe Asp Asn Phe Lys Leu Thr Cys Ser Asn Thr Lys Phe Ala Asp  
1905 1910 1915 1920

Asp Leu Asn Gln Met Thr Gly Phe Thr Lys Pro Ala Ser Arg Glu Leu  
1925 1930 1935

Ser Val Thr Phe Phe Pro Asp Leu Asn Gly Asp Val Val Ala Ile Asp  
1940 1945 1950

Tyr Arg His Tyr Ser Ala Ser Phe Lys Lys Gly Ala Lys Leu Leu His  
1955 1960 1965

Lys Pro Ile Val Trp His Ile Asn Gln Ala Thr Thr Lys Thr Thr Phe  
1970 1975 1980

Lys Pro Asn Thr Trp Cys Leu Arg Cys Leu Trp Ser Thr Lys Pro Val  
1985 1990 1995 2000

Asp Thr Ser Asn Ser Phe Glu Val Leu Ala Val Glu Asp Thr Gln Gly  
2005 2010 2015

Met Asp Asn Leu Ala Cys Glu Ser Gln Gln Pro Thr Ser Glu Glu Val  
2020 2025 2030

Val Glu Asn Pro Thr Ile Gln Lys Glu Val Ile Glu Cys Asp Val Lys  
2035 2040 2045

Thr Thr Glu Val Val Gly Asn Val Ile Leu Lys Pro Ser Asp Glu Gly  
2050 2055 2060

Val Lys Val Thr Gln Glu Leu Gly His Glu Asp Leu Met Ala Ala Tyr  
2065 2070 2075 2080

Val Glu Asn Thr Ser Ile Thr Ile Lys Lys Pro Asn Glu Leu Ser Leu  
2085 2090 2095

Ala Leu Gly Leu Lys Thr Ile Ala Thr His Gly Ile Ala Ala Ile Asn  
2100 2105 2110

Ser Val Pro Trp Ser Lys Ile Leu Ala Tyr Val Lys Pro Phe Leu Gly  
2115 2120 2125



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Gln Ala Ala Ile Thr Thr Ser Asn Cys Ala Lys Arg Leu Ala Gln Arg  
2130 2135 2140

Val Phe Asn Asn Tyr Met Pro Tyr Val Phe Thr Leu Leu Phe Gln Leu  
2145 2150 2155 2160

Cys Thr Phe Thr Lys Ser Thr Asn Ser Arg Ile Arg Ala Ser Leu Pro  
2165 2170 2175

Thr Thr Ile Ala Lys Asn Ser Val Lys Ser Val Ala Lys Leu Cys Leu  
2180 2185 2190

Asp Ala Gly Ile Asn Tyr Val Lys Ser Pro Lys Phe Ser Lys Leu Phe  
2195 2200 2205

Thr Ile Ala Met Trp Leu Leu Leu Leu Ser Ile Cys Leu Gly Ser Leu  
2210 2215 2220

Ile Cys Val Thr Ala Ala Phe Gly Val Leu Leu Ser Asn Phe Gly Ala  
2225 2230 2235 2240

Pro Ser Tyr Cys Asn Gly Val Arg Glu Leu Tyr Leu Asn Ser Ser Asn  
2245 2250 2255

Val Thr Thr Met Asp Phe Cys Glu Gly Ser Phe Pro Cys Ser Ile Cys  
2260 2265 2270

Leu Ser Gly Leu Asp Ser Leu Asp Ser Tyr Pro Ala Leu Glu Thr Ile  
2275 2280 2285

Gln Val Thr Ile Ser Ser Tyr Lys Leu Asp Leu Thr Ile Leu Gly Leu  
2290 2295 2300

Ala Ala Glu Trp Val Leu Ala Tyr Met Leu Phe Thr Lys Phe Phe Tyr  
2305 2310 2315 2320

Leu Leu Gly Leu Ser Ala Ile Met Gln Val Phe Phe Gly Tyr Phe Ala  
2325 2330 2335

Ser His Phe Ile Ser Asn Ser Trp Leu Met Trp Phe Ile Ile Ser Ile  
2340 2345 2350

Val Gln Met Ala Pro Val Ser Ala Met Val Arg Met Tyr Ile Phe Phe  
2355 2360 2365

Ala Ser Phe Tyr Tyr Ile Trp Lys Ser Tyr Val His Ile Met Asp Gly  
2370 2375 2380

Cys Thr Ser Ser Thr Cys Met Met Cys Tyr Lys Arg Asn Arg Ala Thr  
2385 2390 2395 2400

Arg Val Glu Cys Thr Thr Ile Val Asn Gly Met Lys Arg Ser Phe Tyr  
2405 2410 2415

Val Tyr Ala Asn Gly Gly Arg Gly Phe Cys Lys Thr His Asn Trp Asn  
2420 2425 2430

Cys Leu Asn Cys Asp Thr Phe Cys Thr Gly Ser Thr Phe Ile Ser Asp  
2435 2440 2445

Glu Val Ala Arg Asp Leu Ser Leu Gln Phe Lys Arg Pro Ile Asn Pro  
2450 2455 2460

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Thr Asp Gln Ser Ser Tyr Ile Val Asp Ser Val Ala Val Lys Asn Gly  
 2465 2470 2475 2480  
 Ala Leu His Leu Tyr Phe Asp Lys Ala Gly Gln Lys Thr Tyr Glu Arg  
 2485 2490 2495  
 His Pro Leu Ser His Phe Val Asn Leu Asp Asn Leu Arg Ala Asn Asn  
 2500 2505 2510  
 Thr Lys Gly Ser Leu Pro Ile Asn Val Ile Val Phe Asp Gly Lys Ser  
 2515 2520 2525  
 Lys Cys Asp Glu Ser Ala Ser Lys Ser Ala Ser Val Tyr Tyr Ser Gln  
 2530 2535 2540  
 Leu Met Cys Gln Pro Ile Leu Leu Leu Asp Gln Ala Leu Val Ser Asp  
 2545 2550 2555 2560  
 Val Gly Asp Ser Thr Glu Val Ser Val Lys Met Phe Asp Ala Tyr Val  
 2565 2570 2575  
 Asp Thr Phe Ser Ala Thr Phe Ser Val Pro Met Glu Lys Leu Lys Ala  
 2580 2585 2590  
 Leu Val Ala Thr Ala His Ser Glu Leu Ala Lys Gly Val Ala Leu Asp  
 2595 2600 2605  
 Gly Val Leu Ser Thr Phe Val Ser Ala Ala Arg Gln Gly Val Val Asp  
 2610 2615 2620  
 Thr Asp Val Asp Thr Lys Asp Val Ile Glu Cys Leu Lys Leu Ser His  
 2625 2630 2635 2640  
 His Ser Asp Leu Glu Val Thr Gly Asp Ser Cys Asn Asn Phe Met Leu  
 2645 2650 2655  
 Thr Tyr Asn Lys Val Glu Asn Met Thr Pro Arg Asp Leu Gly Ala Cys  
 2660 2665 2670  
 Ile Asp Cys Asn Ala Arg His Ile Asn Ala Gln Val Ala Lys Ser His  
 2675 2680 2685  
 Asn Val Ser Leu Ile Trp Asn Val Lys Asp Tyr Met Ser Leu Ser Glu  
 2690 2695 2700  
 Gln Leu Arg Lys Gln Ile Arg Ser Ala Ala Lys Lys Asn Asn Ile Pro  
 2705 2710 2715 2720  
 Phe Arg Leu Thr Cys Ala Thr Thr Arg Gln Val Val Asn Val Ile Thr  
 2725 2730 2735  
 Thr Lys Ile Ser Leu Lys Gly Gly Lys Ile Val Ser Thr Cys Phe Lys  
 2740 2745 2750  
 Leu Met Leu Lys Ala Thr Leu Leu Cys Val Leu Ala Ala Leu Val Cys  
 2755 2760 2765  
 Tyr Ile Val Met Pro Val His Thr Leu Ser Ile His Asp Gly Tyr Thr  
 2770 2775 2780  
 Asn Glu Ile Ile Gly Tyr Lys Ala Ile Gln Asp Gly Val Thr Arg Asp  
 2785 2790 2795 2800

SEQLIST-20480.TXT

Ile Ile Ser Thr Asp Asp Cys Phe Ala Asn Lys His Ala Gly Phe Asp  
2805 2810 2815

Ala Trp Phe Ser Gln Arg Gly Gly Ser Tyr Lys Asn Asp Lys Ser Cys  
2820 2825 2830

Pro Val Val Ala Ala Ile Ile Thr Arg Glu Ile Gly Phe Ile Val Pro  
2835 2840 2845

Gly Leu Pro Gly Thr Val Leu Arg Ala Ile Asn Gly Asp Phe Leu His  
2850 2855 2860

Phe Leu Pro Arg Val Phe Ser Ala Val Gly Asn Ile Cys Tyr Thr Pro  
2865 2870 2875 2880

Ser Lys Leu Ile Glu Tyr Ser Asp Phe Ala Thr Ser Ala Cys Val Leu  
2885 2890 2895

Ala Ala Glu Cys Thr Ile Phe Lys Asp Ala Met Gly Lys Pro Val Pro  
2900 2905 2910

Tyr Cys Tyr Asp Thr Asn Leu Leu Glu Gly Ser Ile Ser Tyr Ser Glu  
2915 2920 2925

Leu Arg Pro Asp Thr Arg Tyr Val Leu Met Asp Gly Ser Ile Ile Gln  
2930 2935 2940

Phe Pro Asn Thr Tyr Leu Glu Gly Ser Val Arg Val Val Thr Thr Phe  
2945 2950 2955 2960

Asp Ala Glu Tyr Cys Arg His Gly Thr Cys Glu Arg Ser Glu Val Gly  
2965 2970 2975

Ile Cys Leu Ser Thr Ser Gly Arg Trp Val Leu Asn Asn Glu His Tyr  
2980 2985 2990

Arg Ala Leu Ser Gly Val Phe Cys Gly Val Asp Ala Met Asn Leu Ile  
2995 3000 3005

Ala Asn Ile Phe Thr Pro Leu Val Gln Pro Val Gly Ala Leu Asp Val  
3010 3015 3020

Ser Ala Ser Val Val Ala Gly Gly Ile Ile Ala Ile Leu Val Thr Cys  
3025 3030 3035 3040

Ala Ala Tyr Tyr Phe Met Lys Phe Arg Arg Val Phe Gly Glu Tyr Asn  
3045 3050 3055

His Val Val Ala Ala Asn Ala Leu Leu Phe Leu Met Ser Phe Thr Ile  
3060 3065 3070

Leu Cys Leu Val Pro Ala Tyr Ser Phe Leu Pro Gly Val Tyr Ser Val  
3075 3080 3085

Phe Tyr Leu Tyr Leu Thr Phe Tyr Phe Thr Asn Asp Val Ser Phe Leu  
3090 3095 3100

Ala His Leu Gln Trp Phe Ala Met Phe Ser Pro Ile Val Pro Phe Trp  
3105 3110 3115 3120

Ile Thr Ala Ile Tyr Val Phe Cys Ile Ser Leu Lys His Cys His Trp  
3125 3130 3135

SEQLIST-20480.TXT

Phe Phe Asn Asn Tyr Leu Arg Lys Arg Val Met Phe Asn Gly Val Thr  
 3140 3145 3150  
 Phe Ser Thr Phe Glu Glu Ala Ala Leu Cys Thr Phe Leu Leu Asn Lys  
 3155 3160 3165  
 Glu Met Tyr Leu Lys Leu Arg Ser Glu Thr Leu Leu Pro Leu Thr Gln  
 3170 3175 3180  
 Tyr Asn Arg Tyr Leu Ala Leu Tyr Asn Lys Tyr Lys Tyr Phe Ser Gly  
 3185 3190 3195 3200  
 Ala Leu Asp Thr Thr Ser Tyr Arg Glu Ala Ala Cys Cys His Leu Ala  
 3205 3210 3215  
 Lys Ala Leu Asn Asp Phe Ser Asn Ser Gly Ala Asp Val Leu Tyr Gln  
 3220 3225 3230  
 Pro Pro Gln Thr Ser Ile Thr Ser Ala Val Leu Gln Ser Gly Phe Arg  
 3235 3240 3245  
 Lys Met Ala Phe Pro Ser Gly Lys Val Glu Gly Cys Met Val Gln Val  
 3250 3255 3260  
 Thr Cys Gly Thr Thr Thr Leu Asn Gly Leu Trp Leu Asp Asp Thr Val  
 3265 3270 3275 3280  
 Tyr Cys Pro Arg His Val Ile Cys Thr Ala Glu Asp Met Leu Asn Pro  
 3285 3290 3295  
 Asn Tyr Glu Asp Leu Leu Ile Arg Lys Ser Asn His Ser Phe Leu Val  
 3300 3305 3310  
 Gln Ala Gly Asn Val Gln Leu Arg Val Ile Gly His Ser Met Gln Asn  
 3315 3320 3325  
 Cys Leu Leu Arg Leu Lys Val Asp Thr Ser Asn Pro Lys Thr Pro Lys  
 3330 3335 3340  
 Tyr Lys Phe Val Arg Ile Gln Pro Gly Gln Thr Phe Ser Val Leu Ala  
 3345 3350 3355 3360  
 Cys Tyr Asn Gly Ser Pro Ser Gly Val Tyr Gln Cys Ala Met Arg Pro  
 3365 3370 3375  
 Asn His Thr Ile Lys Gly Ser Phe Leu Asn Gly Ser Cys Gly Ser Val  
 3380 3385 3390  
 Gly Phe Asn Ile Asp Tyr Asp Cys Val Ser Phe Cys Tyr Met His His  
 3395 3400 3405  
 Met Glu Leu Pro Thr Gly Val His Ala Gly Thr Asp Leu Glu Gly Lys  
 3410 3415 3420  
 Phe Tyr Gly Pro Phe Val Asp Arg Gln Thr Ala Gln Ala Ala Gly Thr  
 3425 3430 3435 3440  
 Asp Thr Thr Ile Thr Leu Asn Val Leu Ala Trp Leu Tyr Ala Ala Val  
 3445 3450 3455  
 Ile Asn Gly Asp Arg Trp Phe Leu Asn Arg Phe Thr Thr Thr Leu Asn  
 3460 3465 3470

SEQLIST-20480.TXT

Asp Phe Asn Leu Val Ala Met Lys Tyr Asn Tyr Glu Pro Leu Thr Gln  
 3475 3480 3485  
 Asp His Val Asp Ile Leu Gly Pro Leu Ser Ala Gln Thr Gly Ile Ala  
 3490 3495 3500  
 Val Leu Asp Met Cys Ala Ala Leu Lys Glu Leu Leu Gln Asn Gly Met  
 3505 3510 3515 3520  
 Asn Gly Arg Thr Ile Leu Gly Ser Thr Ile Leu Glu Asp Glu Phe Thr  
 3525 3530 3535  
 Pro Phe Asp Val Val Arg Gln Cys Ser Gly Val Thr Phe Gln Gly Lys  
 3540 3545 3550  
 Phe Lys Lys Ile Val Lys Gly Thr His His Trp Met Leu Leu Thr Phe  
 3555 3560 3565  
 Leu Thr Ser Leu Leu Ile Leu Val Gln Ser Thr Gln Trp Ser Leu Phe  
 3570 3575 3580  
 Phe Phe Val Tyr Glu Asn Ala Phe Leu Pro Phe Thr Leu Gly Ile Met  
 3585 3590 3595 3600  
 Ala Ile Ala Ala Cys Ala Met Leu Leu Val Lys His Lys His Ala Phe  
 3605 3610 3615  
 Leu Cys Leu Phe Leu Leu Pro Ser Leu Ala Thr Val Ala Tyr Phe Asn  
 3620 3625 3630  
 Met Val Tyr Met Pro Ala Ser Trp Val Met Arg Ile Met Thr Trp Leu  
 3635 3640 3645  
 Glu Leu Ala Asp Thr Ser Leu Ser Gly Tyr Arg Leu Lys Asp Cys Val  
 3650 3655 3660  
 Met Tyr Ala Ser Ala Leu Val Leu Leu Ile Leu Met Thr Ala Arg Thr  
 3665 3670 3675 3680  
 Val Tyr Asp Asp Ala Ala Arg Arg Val Trp Thr Leu Met Asn Val Ile  
 3685 3690 3695  
 Thr Leu Val Tyr Lys Val Tyr Tyr Gly Asn Ala Leu Asp Gln Ala Ile  
 3700 3705 3710  
 Ser Met Trp Ala Leu Val Ile Ser Val Thr Ser Asn Tyr Ser Gly Val  
 3715 3720 3725  
 Val Thr Thr Ile Met Phe Leu Ala Arg Ala Ile Val Phe Val Cys Val  
 3730 3735 3740  
 Glu Tyr Tyr Pro Leu Leu Phe Ile Thr Gly Asn Thr Leu Gln Cys Ile  
 3745 3750 3755 3760  
 Met Leu Val Tyr Cys Phe Leu Gly Tyr Cys Cys Cys Cys Tyr Phe Gly  
 3765 3770 3775  
 Leu Phe Cys Leu Leu Asn Arg Tyr Phe Arg Leu Thr Leu Gly Val Tyr  
 3780 3785 3790  
 Asp Tyr Leu Val Ser Thr Gln Glu Phe Arg Tyr Met Asn Ser Gln Gly  
 3795 3800 3805

SEQLIST-20480.TXT

Leu Leu Pro Pro Lys Ser Ser Ile Asp Ala Phe Lys Leu Asn Ile Lys  
 3810 3815 3820  
 Leu Leu Gly Ile Gly Gly Lys Pro Cys Ile Lys Val Ala Thr Val Gln  
 3825 3830 3835 3840  
 Ser Lys Met Ser Asp Val Lys Cys Thr Ser Val Val Leu Leu Ser Val  
 3845 3850 3855  
 Leu Gln Gln Leu Arg Val Glu Ser Ser Ser Lys Leu Trp Ala Gln Cys  
 3860 3865 3870  
 Val Gln Leu His Asn Asp Ile Leu Leu Ala Lys Asp Thr Thr Glu Ala  
 3875 3880 3885  
 Phe Glu Lys Met Val Ser Leu Leu Ser Val Leu Leu Ser Met Gln Gly  
 3890 3895 3900  
 Ala Val Asp Ile Asn Arg Leu Cys Glu Glu Met Leu Asp Asn Arg Ala  
 3905 3910 3915 3920  
 Thr Leu Gln Ala Ile Ala Ser Glu Phe Ser Ser Leu Pro Ser Tyr Ala  
 3925 3930 3935  
 Ala Tyr Ala Thr Ala Gln Glu Ala Tyr Glu Gln Ala Val Ala Asn Gly  
 3940 3945 3950  
 Asp Ser Glu Val Val Leu Lys Lys Leu Lys Lys Ser Leu Asn Val Ala  
 3955 3960 3965  
 Lys Ser Glu Phe Asp Arg Asp Ala Ala Met Gln Arg Lys Leu Glu Lys  
 3970 3975 3980  
 Met Ala Asp Gln Ala Met Thr Gln Met Tyr Lys Gln Ala Arg Ser Glu  
 3985 3990 3995 4000  
 Asp Lys Arg Ala Lys Val Thr Ser Ala Met Gln Thr Met Leu Phe Thr  
 4005 4010 4015  
 Met Leu Arg Lys Leu Asp Asn Asp Ala Leu Asn Asn Ile Ile Asn Asn  
 4020 4025 4030  
 Ala Arg Asp Gly Cys Val Pro Leu Asn Ile Ile Pro Leu Thr Thr Ala  
 4035 4040 4045  
 Ala Lys Leu Met Val Val Val Pro Asp Tyr Gly Thr Tyr Lys Asn Thr  
 4050 4055 4060  
 Cys Asp Gly Asn Thr Phe Thr Tyr Ala Ser Ala Leu Trp Glu Ile Gln  
 4065 4070 4075 4080  
 Gln Val Val Asp Ala Asp Ser Lys Ile Val Gln Leu Ser Glu Ile Asn  
 4085 4090 4095  
 Met Asp Asn Ser Pro Asn Leu Ala Trp Pro Leu Ile Val Thr Ala Leu  
 4100 4105 4110  
 Arg Ala Asn Ser Ala Val Lys Leu Gln Asn Asn Glu Leu Ser Pro Val  
 4115 4120 4125  
 Ala Leu Arg Gln Met Ser Cys Ala Ala Gly Thr Thr Gln Thr Ala Cys  
 4130 4135 4140

SEQLIST-20480.TXT

Thr Asp Asp Asn Ala Leu Ala Tyr Tyr Asn Asn Ser Lys Gly Gly Arg  
4145 4150 4155 4160  
Phe Val Leu Ala Leu Leu Ser Asp His Gln Asp Leu Lys Trp Ala Arg  
4165 4170 4175  
Phe Pro Lys Ser Asp Gly Thr Gly Thr Ile Tyr Thr Glu Leu Glu Pro  
4180 4185 4190  
Pro Cys Arg Phe Val Thr Asp Thr Pro Lys Gly Pro Lys Val Lys Tyr  
4195 4200 4205  
Leu Tyr Phe Ile Lys Gly Leu Asn Asn Leu Asn Arg Gly Met Val Leu  
4210 4215 4220  
Gly Ser Leu Ala Ala Thr Val Arg Leu Gln Ala Gly Asn Ala Thr Glu  
4225 4230 4235 4240  
Val Pro Ala Asn Ser Thr Val Leu Ser Phe Cys Ala Phe Ala Val Asp  
4245 4250 4255  
Pro Ala Lys Ala Tyr Lys Asp Tyr Leu Ala Ser Gly Gly Gln Pro Ile  
4260 4265 4270  
Thr Asn Cys Val Lys Met Leu Cys Thr His Thr Gly Thr Gly Gln Ala  
4275 4280 4285  
Ile Thr Val Thr Pro Glu Ala Asn Met Asp Gln Glu Ser Phe Gly Gly  
4290 4295 4300  
Ala Ser Cys Cys Leu Tyr Cys Arg Cys His Ile Asp His Pro Asn Pro  
4305 4310 4315 4320  
Lys Gly Phe Cys Asp Leu Lys Gly Lys Tyr Val Gln Ile Pro Thr Thr  
4325 4330 4335  
Cys Ala Asn Asp Pro Val Gly Phe Thr Leu Arg Asn Thr Val Cys Thr  
4340 4345 4350  
Val Cys Gly Met Trp Lys Gly Tyr Gly Cys Ser Cys Asp Gln Leu Arg  
4355 4360 4365  
Glu Pro Leu Met Gln Ser Ala Asp Ala Ser Thr Phe Leu Asn Gly Phe  
4370 4375 4380

Ala Val  
4385

<210> 6593  
<211> 34  
<212> PRT  
<213> SARS coronavirus

<400> 6593  
Val Gln Pro Val Leu His Arg Ala Ala Gln Ala Leu Val Leu Met Ser  
1 5 10 15

Ser Thr Gly Leu Leu Ile Phe Thr Thr Lys Lys Leu Leu Val Leu Gln  
20 25 30

Ser Ser

SEQLIST-20480.TXT

<210> 6594  
 <211> 16  
 <212> PRT  
 <213> SARS coronavirus

<400> 6594  
 Lys Leu Ile Ala val Ala Ser Arg Arg Arg Met Arg Lys Ala Ile Tyr  
 1 5 10 15

<210> 6595  
 <211> 4  
 <212> PRT  
 <213> SARS coronavirus

<400> 6595  
 Thr Leu Thr Leu  
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<210> 6596  
 <211> 34  
 <212> PRT  
 <213> SARS coronavirus

<400> 6596  
 Leu Arg Gly Ile Leu Cys Leu Thr Thr Asn Met Lys Arg Leu Phe Ile  
 1 5 10 15

Thr Trp Leu Lys Ile Val Gln Arg Leu Leu Ser Met Thr Phe Ser Ser  
 20 25 30

Leu Glu

<210> 6597  
 <211> 12  
 <212> PRT  
 <213> SARS coronavirus

<400> 6597  
 Met Val Thr Trp Tyr His Ile Tyr His val Ser Val  
 1 5 10

<210> 6598  
 <211> 7  
 <212> PRT  
 <213> SARS coronavirus

<400> 6598  
 Leu Asn Thr Gln Trp Leu Ile  
 1 5

<210> 6599  
 <211> 14  
 <212> PRT  
 <213> SARS coronavirus

<400> 6599  
 Ser Met Leu Tyr val Ile Leu Met Arg val Ile val Ile His  
 1 5 10

<210> 6600



SEQLIST-20480.TXT

<211> 23  
 <212> PRT  
 <213> SARS coronavirus

<400> 6600  
 Lys Lys Tyr Ser Ser His Thr Ile Ala Val Met Met Ile Ile Ser Ile  
 1 5 10 15

Arg Arg Ile Gly Met Thr Ser  
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<210> 6601  
 <211> 11  
 <212> PRT  
 <213> SARS coronavirus

<400> 6601  
 Arg Ile Leu Thr Ser Tyr Ala Tyr Met Leu Thr  
 1 5 10

<210> 6602  
 <211> 8  
 <212> PRT  
 <213> SARS coronavirus

<400> 6602  
 Val Ser Val Tyr Ala Asn His Tyr  
 1 5

<210> 6603  
 <211> 14  
 <212> PRT  
 <213> SARS coronavirus

<400> 6603  
 Arg Leu Tyr Asn Ser Ala Met Leu Cys Val Met Gln Ala Leu  
 1 5 10

<210> 6604  
 <211> 17  
 <212> PRT  
 <213> SARS coronavirus

<400> 6604  
 Ile Ile Arg Ile Leu Met Gly Thr Gly Thr Ile Ser Val Ile Ser Tyr  
 1 5 10 15

Lys

<210> 6605  
 <211> 15  
 <212> PRT  
 <213> SARS coronavirus

<400> 6605  
 His Gln Ala Ala Glu Phe Leu Leu Trp Ile His Ile Thr His Cys  
 1 5 10 15

<210> 6606  
 <211> 5  
 <212> PRT  
 <213> SARS coronavirus

SEQLIST-20480.TXT

<400> 6606  
Cys Pro Ser Ser Leu  
1 5

<210> 6607  
<211> 23  
<212> PRT  
<213> SARS coronavirus

<400> 6607  
Leu Gly His Trp Leu Leu Ser Pro Ile Trp Met Leu Ile Ser Gln Asn  
1 5 10 15

His Leu Leu Ser Gly Ile Cys  
20

<210> 6608  
<211> 57  
<212> PRT  
<213> SARS coronavirus

<400> 6608  
Asn Met Ile Leu Arg Lys Arg Asp Phe Val Ser Ser Thr Val Ile Leu  
1 5 10 15

Asn Ile Gly Thr Arg His Thr Ile Pro Ile Val Leu Thr Val Trp Met  
20 25 30

Ile Gly Val Ser Phe Ile Val Gln Thr Leu Met Cys Tyr Phe Leu Leu  
35 40 45

Cys Phe His Leu Gln Val Leu Asp His  
50 55

<210> 6609  
<211> 4  
<212> PRT  
<213> SARS coronavirus

<400> 6609  
Glu Lys Tyr Leu  
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<210> 6610  
<211> 15  
<212> PRT  
<213> SARS coronavirus

<400> 6610  
Met Val Phe Leu Leu Leu Phe Gln Leu Asp Thr Ile Phe Val Ser  
1 5 10 15

<210> 6611  
<211> 7  
<212> PRT  
<213> SARS coronavirus

<400> 6611  
Glu Ser Tyr Ile Ile Arg Met  
1 5

<210> 6612

SEQLIST-20480.TXT

<211> 12  
 <212> PRT  
 <213> SARS coronavirus

<400> 6612  
 Thr Tyr Ile Ala Arg Val Ser Val Ser Arg Asn Phe  
 1 5 10

<210> 6613  
 <211> 16  
 <212> PRT  
 <213> SARS coronavirus

<400> 6613  
 Cys Met Leu Leu Ile Gln Leu Cys Met Gln Leu Leu Ala Ile Tyr Cys  
 1 5 10 15

<210> 6614  
 <211> 8  
 <212> PRT  
 <213> SARS coronavirus

<400> 6614  
 Ile Asn Ala Leu His Ala Phe Gln  
 1 5

<210> 6615  
 <211> 35  
 <212> PRT  
 <213> SARS coronavirus

<400> 6615  
 Gln Thr Met Leu Leu Phe Lys Leu Ser Asn Pro Val Ile Leu Ile Lys  
 1 5 10 15

Thr Phe Met Thr Leu Leu Cys Leu Lys Val Ser Leu Arg Lys Glu Val  
 20 25 30

Leu Leu Asn  
 35

<210> 6616  
 <211> 34  
 <212> PRT  
 <213> SARS coronavirus

<400> 6616  
 Asn Thr Ser Ser Leu Leu Arg Met Ala Thr Leu Leu Ser Val Ile Met  
 1 5 10 15

Thr Ile Ile Val Ile Ile Cys Gln Gln Cys Val Ile Ser Asp Asn Ser  
 20 25 30

Tyr Ser

<210> 6617  
 <211> 20  
 <212> PRT  
 <213> SARS coronavirus

<400> 6617

SEQLIST-20480.TXT

Leu Lys Leu Leu Ile Asn Thr Leu Ile Val Thr Met Val Ala Val Leu  
1 5 10 15

Met Pro Thr Lys  
20

<210> 6618  
<211> 25  
<212> PRT  
<213> SARS coronavirus

<400> 6618  
Ser Leu Thr Ile Trp Ile Asn Gln Leu Val Ser His Leu Ile Asn Gly  
1 5 10 15

Val Arg Leu Asp Phe Ile Met Thr Gln  
20 25

<210> 6619  
<211> 19  
<212> PRT  
<213> SARS coronavirus

<400> 6619  
Val Met Arg Ile Lys Met His Phe Ser Arg Ile Leu Ser Val Met Ser  
1 5 10 15

Ser Leu Leu

<210> 6620  
<211> 14  
<212> PRT  
<213> SARS coronavirus

<400> 6620  
Ile Leu Ser Met Pro Leu Val Gln Arg Ile Glu Leu Ala Pro  
1 5 10

<210> 6621  
<211> 8  
<212> PRT  
<213> SARS coronavirus

<400> 6621  
Leu Val Ser Leu Ser Val Val Leu  
1 5

<210> 6622  
<211> 9  
<212> PRT  
<213> SARS coronavirus

<400> 6622  
Gln Ile Asp Ser Phe Ile Arg Asn Tyr  
1 5

<210> 6623  
<211> 8  
<212> PRT  
<213> SARS coronavirus

<400> 6623

Pro Pro Leu Glu Glu Leu Leu Trp  
1 5

<210> 6624  
<211> 13  
<212> PRT  
<213> SARS coronavirus

<400> 6624  
Leu Glu Gln Ala Ser Phe Thr Val Ala Gly Ile Ile Cys  
1 5 10

<210> 6625  
<211> 6  
<212> PRT  
<213> SARS coronavirus

<400> 6625  
Lys Leu Phe Thr Val Met  
1 5

<210> 6626  
<211> 22  
<212> PRT  
<213> SARS coronavirus

<400> 6626  
Lys Leu His Thr Leu Trp Val Gly Ile Ile Gln Asn Val Thr Glu Pro  
1 5 10 15

Cys Leu Thr Cys Leu Gly  
20

<210> 6627  
<211> 22  
<212> PRT  
<213> SARS coronavirus

<400> 6627  
Trp Pro Leu Leu Phe Leu Leu Ala Asn Ile Thr Leu Ala Val Thr Tyr  
1 5 10 15

His Thr Val Ser Thr Gly  
20

<210> 6628  
<211> 7  
<212> PRT  
<213> SARS coronavirus

<400> 6628  
Leu Thr Ser Val Arg Lys Tyr  
1 5

<210> 6629  
<211> 40  
<212> PRT  
<213> SARS coronavirus

<400> 6629  
Val Arg Trp Ser Cys Val Ala Ala His Tyr Met Leu Asn Gln Val Glu  
1 5 10 15

SEQLIST-20480.TXT

His His Pro Val Met Leu Gln Leu Leu Met Leu Ile Val Ser Leu Thr  
20 25 30

Phe Val Lys Leu Leu Gln Pro Met  
35 40

<210> 6630  
<211> 10  
<212> PRT  
<213> SARS coronavirus

<400> 6630  
Met His Phe Phe Gln Leu Met Val Ile Arg  
1 5 10

<210> 6631  
<211> 39  
<212> PRT  
<213> SARS coronavirus

<400> 6631  
Leu Thr Ser Met Ser Ala Ile Tyr Asn Thr Gly Ser Met Ser Val Ser  
1 5 10 15

Ile Glu Ile Gly Met Leu Ile Met Asn Ser Trp Met Ser Phe Thr Leu  
20 25 30

Thr Cys Val Asn Ile Ser Pro  
35

<210> 6632  
<211> 18  
<212> PRT  
<213> SARS coronavirus

<400> 6632  
Phe Phe Leu Met Met Pro Leu Cys Ala Ile Thr Val Thr Met Arg Leu  
1 5 10 15

Lys Val

<210> 6633  
<211> 42  
<212> PRT  
<213> SARS coronavirus

<400> 6633  
Leu Ala Leu Arg Thr Leu Arg Gln Phe Phe Ile Ile Lys Ile Met Cys  
1 5 10 15

Ser Cys Leu Arg Gln Asn Val Gly Leu Arg Leu Thr Leu Leu Lys Asp  
20 25 30

Leu Thr Asn Phe Ala His Ser Ile Gln Cys  
35 40

<210> 6634  
<211> 18  
<212> PRT  
<213> SARS coronavirus

<400> 6634

SEQLIST-20480.TXT

Leu Asn Lys Glu Met Ile Thr Cys Thr Cys Leu Thr Gln Ile His Gln  
1 5 10 15

Glu Tyr

<210> 6635  
<211> 16  
<212> PRT  
<213> SARS coronavirus

<400> 6635  
Ala Gln Ala Val Leu Ser Met Ile Leu Ser Lys Gln Met Val His Leu  
1 5 10 15

<210> 6636  
<211> 49  
<212> PRT  
<213> SARS coronavirus

<400> 6636  
Leu Lys Gly Ser Cys His Trp Leu Leu Met Leu Thr His Leu Gln Asn  
1 5 10 15

Ile Leu Ile Arg Ser Met Leu Met Ser Phe Thr Cys Ile Tyr Asn Thr  
20 25 30

Leu Glu Ser Tyr Met Met Ser Leu Leu Ala Thr Cys Trp Thr Cys Ile  
35 40 45

Pro

<210> 6637  
<211> 26  
<212> PRT  
<213> SARS coronavirus

<400> 6637  
Leu Met Ile Thr Pro His Gly Thr Gly Asn Leu Ser Phe Met Arg Leu  
1 5 10 15

Cys Thr His His Ile Gln Ser Cys Arg Leu  
20 25

<210> 6638  
<211> 38  
<212> PRT  
<213> SARS coronavirus

<400> 6638  
Val Leu Val Tyr Cys Ala Ile His Arg Leu His Phe Val Ala Val Pro  
1 5 10 15

Val Leu Gly Asp His Ser Tyr Val Ala Ser Ala Ala Met Thr Met Ser  
20 25 30

Phe Gln His His Thr Asn  
35

<210> 6639  
<211> 18

SEQLIST-20480.TXT

<212> PRT  
<213> SARS coronavirus

<400> 6639  
Cys Cys Leu Leu Ile Pro Met Phe Ala Met Pro Gln Val Val Met Ser  
1 5 10 15

Leu Met

<210> 6640  
<211> 4  
<212> PRT  
<213> SARS coronavirus

<400> 6640  
His Asn Cys Ile  
1

<210> 6641  
<211> 29  
<212> PRT  
<213> SARS coronavirus

<400> 6641  
Ala Ile Ile Ala Ser His Ile Ser Leu Pro Leu Val Phe His Tyr Val  
1 5 10 15

Leu Met Val Arg Phe Leu Val Tyr Thr Lys Thr His Val  
20 25

<210> 6642  
<211> 10  
<212> PRT  
<213> SARS coronavirus

<400> 6642  
Ala Val Thr Met Ser Leu Thr Ser Met Arg  
1 5 10

<210> 6643  
<211> 66  
<212> PRT  
<213> SARS coronavirus

<400> 6643  
Gln His Val Ile Gly Leu Met Leu Ala Ile Thr Tyr Leu Pro Thr Leu  
1 5 10 15

Val Leu Arg Asp Ser Ser Phe Ser Gln Gln Lys Arg Ser Lys Pro Leu  
20 25 30

Arg Lys His Leu Ser Cys His Met Val Leu Pro Leu Tyr Ala Lys Tyr  
35 40 45

Ser Leu Thr Glu Asn Cys Ile Phe His Gly Arg Leu Glu Asn Leu Asp  
50 55 60

His His  
65

<210> 6644  
<211> 10



SEQLIST-20480.TXT

<212> PRT  
<213> SARS coronavirus

<400> 6644  
Thr Glu Thr Met Ser Leu Leu Val Thr Val  
1 5 10

<210> 6645  
<211> 31  
<212> PRT  
<213> SARS coronavirus

<400> 6645  
Leu Lys Ile Val Lys Tyr Arg Leu Glu Ser Thr Pro Leu Lys Lys Val  
1 5 10 15  
Thr Met Val Met Leu Leu Cys Thr Glu Val Leu Arg His Thr Ser  
20 25 30

<210> 6646  
<211> 7  
<212> PRT  
<213> SARS coronavirus

<400> 6646  
Met Leu Val Ile Thr Leu Cys  
1 5

<210> 6647  
<211> 4  
<212> PRT  
<213> SARS coronavirus

<400> 6647  
His Leu Thr Leu  
1

<210> 6648  
<211> 7  
<212> PRT  
<213> SARS coronavirus

<400> 6648  
Cys His Leu Val His Leu Leu  
1 5

<210> 6649  
<211> 6  
<212> PRT  
<213> SARS coronavirus

<400> 6649  
Cys His Lys Ser Thr Met  
1 5

<210> 6650  
<211> 56  
<212> PRT  
<213> SARS coronavirus

<400> 6650  
Glu Leu Leu Ala Cys Thr Gln His Ser Thr Ser Gln Met Ser Phe Leu  
1 5 10 15

SEQLIST-20480.TXT

Ala Met Leu Gln Ile Ile Lys Arg Ser Ala Cys Lys Ser Thr Leu His  
20 25 30

Ser Lys Asp His Leu Val Leu Val Arg Val Ile Leu Pro Ser Asp Leu  
35 40 45

Leu Ser Ile Thr His Leu Leu Ala  
50 55

<210> 6651  
<211> 17  
<212> PRT  
<213> SARS coronavirus

<400> 6651  
Cys Ile Arg His Ala Leu Met Gln Leu Leu Met Pro Tyr Val Lys Arg  
1 5 10 15

His

<210> 6652  
<211> 4  
<212> PRT  
<213> SARS coronavirus

<400> 6652  
Asn Ile Cys Pro  
1

<210> 6653  
<211> 12  
<212> PRT  
<213> SARS coronavirus

<400> 6653  
Ile Asn Val Val Glu Ser Tyr Leu Arg Val Arg Ala  
1 5 10

<210> 6654  
<211> 7  
<212> PRT  
<213> SARS coronavirus

<400> 6654  
Ser Val Leu Ile Asn Ser Lys  
1 5

<210> 6655  
<211> 7  
<212> PRT  
<213> SARS coronavirus

<400> 6655  
Asn Ser Met Phe Ser Ala Leu  
1 5

<210> 6656  
<211> 10  
<212> PRT  
<213> SARS coronavirus

SEQLIST-20480.TXT

<400> 6656  
Met His Cys Gln Lys Gln Leu Leu Thr Leu  
1 5 10

<210> 6657  
<211> 12  
<212> PRT  
<213> SARS coronavirus

<400> 6657  
Ser Leu Met Lys Ser Leu Trp Leu Leu Ile Met Thr  
1 5 10

<210> 6658  
<211> 27  
<212> PRT  
<213> SARS coronavirus

<400> 6658  
Val Leu Ser Met Leu Asp Phe Val Gln Asn Thr Thr Ser Ile Leu Ala  
1 5 10 15

Ile Leu Leu Asn Tyr Gln Pro Pro Ala His Cys  
20 25

<210> 6659  
<211> 4  
<212> PRT  
<213> SARS coronavirus

<400> 6659  
Leu Lys Ala His  
1

<210> 6660  
<211> 11  
<212> PRT  
<213> SARS coronavirus

<400> 6660  
Asn Gln Asn Ile Leu Ile Gln Cys Ala Asp Leu  
1 5 10

<210> 6661  
<211> 19  
<212> PRT  
<213> SARS coronavirus

<400> 6661  
Val Gln Thr Cys Ser Leu Glu Leu Val Ala Val Val Leu Leu Lys Leu  
1 5 10 15

Leu Thr Leu

<210> 6662  
<211> 5  
<212> PRT  
<213> SARS coronavirus

<400> 6662  
Phe Met Thr Ile Ser  
1 5

SEQLIST-20480.TXT

<210> 6663  
 <211> 31  
 <212> PRT  
 <213> SARS coronavirus

<400> 6663  
 Lys His Thr Arg Ile Ser Gln Leu Asn Ala Ser Lys Cys Ser Thr Lys  
 1 5 10 15  
 Val Leu Leu His Met Met Phe His Leu Gln Ser Thr Asp Leu Lys  
 20 25 30

<210> 6664  
 <211> 24  
 <212> PRT  
 <213> SARS coronavirus

<400> 6664  
 Glu Asn Phe Leu His Ala Ile Leu Leu Gly Glu Lys Leu Phe Leu Ser  
 1 5 10 15  
 His Leu Ile Ile His Arg Thr Leu  
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<210> 6665  
 <211> 4  
 <212> PRT  
 <213> SARS coronavirus

<400> 6665  
 Leu Gln Lys Ser  
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<210> 6666  
 <211> 48  
 <212> PRT  
 <213> SARS coronavirus

<400> 6666  
 Asp Cys Leu Arg Arg Leu Leu Ile His His Arg Val Leu Asn Met Thr  
 1 5 10 15  
 Met Ser Tyr Ser His Lys Leu Leu Lys Gln His Thr Leu Val Met Ser  
 20 25 30  
 Thr Ala Ser Met Trp Leu Ser Gln Gly Gln Lys Leu Ala Phe Cys Ala  
 35 40 45

<210> 6667  
 <211> 14  
 <212> PRT  
 <213> SARS coronavirus

<400> 6667  
 Cys Leu Ile Glu Ile Phe Met Thr Asn Cys Asn Leu Gln Val  
 1 5 10

<210> 6668  
 <211> 14  
 <212> PRT  
 <213> SARS coronavirus

SEQLIST-20480.TXT

<400> 6668  
Lys Tyr His Val Ala Met Trp Leu His Tyr Lys Gln Lys Met  
1 5 10

<210> 6669  
<211> 26  
<212> PRT  
<213> SARS coronavirus

<400> 6669  
Leu Asp Phe Leu Arg Thr Val Val Arg Ser Leu Leu Val Phe Ile Leu  
1 5 10 15  
His Arg His Leu His Thr Ser Ala Leu Ile  
20 25

<210> 6670  
<211> 17  
<212> PRT  
<213> SARS coronavirus

<400> 6670  
Ser Ser Arg Leu Lys Asp Tyr Val Leu Thr Tyr Gln Ala Tyr Gln Arg  
1 5 10 15

Thr

<210> 6671  
<211> 7  
<212> PRT  
<213> SARS coronavirus

<400> 6671  
Pro Thr Val Asp Ser Ser Leu  
1 5

<210> 6672  
<211> 4  
<212> PRT  
<213> SARS coronavirus

<400> 6672  
Trp Val Ser Lys  
1

<210> 6673  
<211> 28  
<212> PRT  
<213> SARS coronavirus

<400> 6673  
Ile Thr Lys Ser Met Val Thr Leu Ile Cys Leu Ser Pro Ala Lys Lys  
1 5 10 15

Leu Phe Val Thr Phe Val Arg Gly Leu Ala Leu Met  
20 25

<210> 6674  
<211> 17  
<212> PRT  
<213> SARS coronavirus

SEQLIST-20480.TXT

<400> 6674  
Arg Ala Val Met Gln Leu Glu Met Leu Trp Val Leu Thr Tyr Leu Ser  
1 5 10 15

Ser

<210> 6675  
<211> 7  
<212> PRT  
<213> SARS coronavirus

<400> 6675  
Asp Phe Leu Gln Val Leu Thr  
1 5

<210> 6676  
<211> 42  
<212> PRT  
<213> SARS coronavirus

<400> 6676  
Leu Tyr Arg Leu Val Met Leu Thr Leu Lys Ile Thr Gln Asn Ser Pro  
1 5 10 15

Glu Leu Met Gln Asn Leu His Gln Val Thr Ser Leu Asn Ile Leu Tyr  
20 25 30

His Ser Cys Ile Lys Ala Cys Pro Gly Met  
35 40

<210> 6677  
<211> 4  
<212> PRT  
<213> SARS coronavirus

<400> 6677  
Cys Val Leu Arg  
1

<210> 6678  
<211> 7  
<212> PRT  
<213> SARS coronavirus

<400> 6678  
Tyr Lys Cys Ser Val Ile His  
1 5

<210> 6679  
<211> 20  
<212> PRT  
<213> SARS coronavirus

<400> 6679  
Lys Asp Cys Gln Thr Glu Ser Cys Ser Ser Phe Gly Arg Met Ala Leu  
1 5 10 15

Ser Leu His Gln  
20

<210> 6680

SEQLIST-20480.TXT

<211> 45  
<212> PRT  
<213> SARS coronavirus

<400> 6680  
Ser Thr Leu Ser Arg Leu Asp Leu Lys Glu Arg Val Val Cys Val Thr  
1 5 10 15  
Asn Val Gln Leu Ala Phe Leu Leu His Gln Ile Leu Met Pro Ala Gly  
20 25 30  
Ile Ile Leu Trp Val Leu Thr Met Ser Ile Thr His Leu  
35 40 45

<210> 6681  
<211> 34  
<212> PRT  
<213> SARS coronavirus

<400> 6681  
Leu Met Phe Ser Ser Gly Ala Leu Arg Val Thr Phe Arg Val Thr Met  
1 5 10 15  
Thr Asn Ile Ala Arg Tyr Met Glu Met His Met Trp Leu Val Val Met  
20 25 30  
Leu Ser

<210> 6682  
<211> 18  
<212> PRT  
<213> SARS coronavirus

<400> 6682  
Gln Ser Met Ser Ala Leu Leu Ser Ala Leu Ile Gly Leu Leu Asn Thr  
1 5 10 15  
Leu Leu

<210> 6683  
<211> 13  
<212> PRT  
<213> SARS coronavirus

<400> 6683  
Gly Leu Ile Leu Leu Ala Glu Lys Tyr Asn Thr Trp Leu  
1 5 10

<210> 6684  
<211> 28  
<212> PRT  
<213> SARS coronavirus

<400> 6684  
Ser Leu His Cys Leu Leu Ile Ser Phe Gln Phe Phe Met Thr Leu Glu  
1 5 10 15  
Ile Gln Arg Leu Ser Ser Val Cys Leu Arg Leu Lys  
20 25

<210> 6685

SEQLIST-20480.TXT

<211> 16  
<212> PRT  
<213> SARS coronavirus

<400> 6685  
Asn Gly Ser Ser Thr Met Leu Ser His Val Val Thr Lys Leu Thr Lys  
1 5 10 15

<210> 6686  
<211> 45  
<212> PRT  
<213> SARS coronavirus

<400> 6686  
Arg Asn Ser Ser Ile Leu Met Leu His Ile Thr Ile Asn Ser Leu Met  
1 5 10 15  
Val Phe Val Cys Phe Gly Ile Val Thr Leu Ile Val Thr Gln Pro Met  
20 25 30  
Gln Leu Cys Val Gly Leu Thr Gln Glu Ser Cys Gln Thr  
35 40 45

<210> 6687  
<211> 11  
<212> PRT  
<213> SARS coronavirus

<400> 6687  
Thr Tyr Gln Ala Val Met Val Val Val Cys Met  
1 5 10

<210> 6688  
<211> 17  
<212> PRT  
<213> SARS coronavirus

<400> 6688  
Ile Ser Met His Ser Thr Leu Gln Leu Ser Ile Lys Val His Leu Leu  
1 5 10 15  
Ile

<210> 6689  
<211> 19  
<212> PRT  
<213> SARS coronavirus

<400> 6689  
Ser Asn Cys Leu Ser Phe Thr Ile Leu Ile Val Leu Val Ser Leu Met  
1 5 10 15  
Ala Asn Lys

<210> 6690  
<211> 19  
<212> PRT  
<213> SARS coronavirus

<400> 6690



SEQLIST-20480.TXT

Cys Arg Ile Leu Ile Met Phe His Ser Asn Leu Leu Arg Val Leu His  
1 5 10 15

Asp Ala Ile

<210> 6691  
<211> 20  
<212> PRT  
<213> SARS coronavirus

<400> 6691  
Val Val Leu Phe Ala Asp Thr Met Gln Met Ser Thr Asp Ser Thr Trp  
1 5 10 15

Met His Ile Ile  
20

<210> 6692  
<211> 27  
<212> PRT  
<213> SARS coronavirus

<400> 6692  
Phe Leu Leu Asp Leu Ala Tyr Gly Phe Thr Asn Asn Leu Ile Leu Ile  
1 5 10 15

Thr Cys Gly Ile His Leu Pro Gly Tyr Arg Val  
20 25

<210> 6693  
<211> 32  
<212> PRT  
<213> SARS coronavirus

<400> 6693  
Lys Met Trp Leu Ile Met Leu Leu Ile Lys Asp Thr Leu Met Asp Thr  
1 5 10 15

Pro Ala Lys His Leu Phe Pro Ser Leu Ile Met Leu Phe Thr Gln Arg  
20 25 30

<210> 6694  
<211> 48  
<212> PRT  
<213> SARS coronavirus

<400> 6694  
Met Val Leu Met Trp Arg Ser Leu Lys Ile Arg Gln His Phe Leu Leu  
1 5 10 15

Met Leu His Leu Ser Phe Gly Leu Ser Val Thr Leu Asn Gln Cys Gln  
20 25 30

Arg Leu Arg Tyr Ser Ile Ile Trp Val Leu Ile Ser Leu Leu Ile Leu  
35 40 45

<210> 6695  
<211> 14  
<212> PRT  
<213> SARS coronavirus

SEQLIST-20480.TXT

<400> 6695  
Ser Gly Thr Thr Lys Glu Lys Pro Gln His Met Tyr Leu Gln  
1 5 10

<210> 6696  
<211> 4  
<212> PRT  
<213> SARS coronavirus

<400> 6696  
Val Ser Ala Gln  
1

<210> 6697  
<211> 26  
<212> PRT  
<213> SARS coronavirus

<400> 6697  
Leu Thr Leu Pro Arg Asn Leu Leu Arg Val Leu Val Leu His Leu Leu  
1 5 10 15

Ser Cys Leu Met Val Glu Trp Lys Asp Arg  
20 25

<210> 6698  
<211> 10  
<212> PRT  
<213> SARS coronavirus

<400> 6698  
Thr Phe Leu Glu Thr Pro Val Met Val Phe  
1 5 10

<210> 6699  
<211> 7  
<212> PRT  
<213> SARS coronavirus

<400> 6699  
Gln Lys Val Gln Ser Lys Val  
1 5

<210> 6700  
<211> 15  
<212> PRT  
<213> SARS coronavirus

<400> 6700  
His Leu Gln Arg Asp Gln His Lys Leu Ala Ser Met Glu Ser His  
1 5 10 15

<210> 6701  
<211> 4  
<212> PRT  
<213> SARS coronavirus

<400> 6701  
Leu Glu Asn Gln  
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<210> 6702

SEQLIST-20480.TXT

<211> 9  
<212> PRT  
<213> SARS coronavirus

<400> 6702  
Lys His Ser Leu Thr Thr Leu Arg Lys  
1 5

<210> 6703  
<211> 17  
<212> PRT  
<213> SARS coronavirus

<400> 6703  
Thr Ala Leu Phe Asn Ser Cys Leu Lys Pro Thr Leu Leu Arg Ala Glu  
1 5 10 15

Thr

<210> 6704  
<211> 49  
<212> PRT  
<213> SARS coronavirus

<400> 6704  
Arg Ile Leu Ser Pro Asp His Lys Trp Lys Leu Thr Phe Ser Ser Ser  
1 5 10 15

Leu Trp Met Asn Ser Tyr Ser Asp Ile Ser Ser Arg Ala Met Pro Ser  
20 25 30

Asn Thr Ser Phe Met Glu Ile Ser Val Met Asp Asn Leu Ala Val Phe  
35 40 45

Ile

<210> 6705  
<211> 10  
<212> PRT  
<213> SARS coronavirus

<400> 6705  
Pro Ser Ala His Lys Ile His His Leu Asn  
1 5 10

<210> 6706  
<211> 9  
<212> PRT  
<213> SARS coronavirus

<400> 6706  
Arg Ile Leu Ser Leu Trp Thr Ala Gln  
1 5

<210> 6707  
<211> 4  
<212> PRT  
<213> SARS coronavirus

<400> 6707  
Lys Ile Thr Ser

1

<210> 6708  
 <211> 13  
 <212> PRT  
 <213> SARS coronavirus

<400> 6708  
 Gln Met Arg Lys Gln Val His Gln Asn Val Cys Val Leu  
 1 5 10

<210> 6709  
 <211> 10  
 <212> PRT  
 <213> SARS coronavirus

<400> 6709  
 Leu Ile Phe Tyr Leu Met Thr Leu Ser Arg  
 1 5 10

<210> 6710  
 <211> 6  
 <212> PRT  
 <213> SARS coronavirus

<400> 6710  
 Ser His Lys Ile Cys Gln  
 1 5

<210> 6711  
 <211> 72  
 <212> PRT  
 <213> SARS coronavirus

<400> 6711  
 Phe Gln Lys Trp Ser Arg Leu Gln Leu Thr Met Leu Lys Phe His Ser  
 1 5 10 15

Cys Phe Gly Val Arg Met Asp Met Leu Lys Pro Ser Thr Gln Asn Tyr  
 20 25 30

Lys Gln Val Glu Arg Gly Asn Gln Val Leu Arg Cys Leu Thr Cys Thr  
 35 40 45

Arg Cys Lys Glu Cys Phe Leu Lys Ser Val Thr Phe Arg Ile Met Val  
 50 55 60

Lys Met Leu Leu Tyr Gln Lys Glu  
 65 70

<210> 6712  
 <211> 11  
 <212> PRT  
 <213> SARS coronavirus

<400> 6712  
 Met Ser Gln Ser Ile Leu Asn Cys Val Asn Thr  
 1 5 10

<210> 6713  
 <211> 4  
 <212> PRT  
 <213> SARS coronavirus

SEQLIST-20480.TXT

<400> 6713  
Ile His Leu Leu  
1

<210> 6714  
<211> 5  
<212> PRT  
<213> SARS coronavirus

<400> 6714  
Leu Tyr Pro Thr Thr  
1 5

<210> 6715  
<211> 45  
<212> PRT  
<213> SARS coronavirus

<400> 6715  
Glu Leu Phe Thr Leu Val Leu Ala Leu Ile Lys Glu Leu His Gln Val  
1 5 10 15

Gln Leu Cys Ser Asp Asn Gly Cys Gln Leu Ala His Tyr Leu Ser Ile  
20 25 30

Gln Ile Leu Met Thr Ser Ser Pro Thr His Ile Leu Leu  
35 40 45

<210> 6716  
<211> 27  
<212> PRT  
<213> SARS coronavirus

<400> 6716  
Leu Glu Thr Val Gln Gln Tyr Ile Arg Leu Ile Asn Gly Thr Leu Leu  
1 5 10 15

Leu Ala Ile Cys Met Thr Leu Gly Pro Asn Met  
20 25

<210> 6717  
<211> 17  
<212> PRT  
<213> SARS coronavirus

<400> 6717  
Gln Lys Arg Met Thr Leu Lys Lys Gly Phe Ser Leu Ile Cys Val Asp  
1 5 10 15

Leu

<210> 6718  
<211> 3  
<212> PRT  
<213> SARS coronavirus

<400> 6718  
Ser Lys Asn  
1

<210> 6719

SEQLIST-20480.TXT

<211> 5  
<212> PRT  
<213> SARS coronavirus

<400> 6719  
Pro Trp Val Val Leu  
1 5

<210> 6720  
<211> 25  
<212> PRT  
<213> SARS coronavirus

<400> 6720  
Gln Ser Ile Leu Gly Met Leu Thr Phe Thr Ser Leu Trp Ala Ile Ser  
1 5 10 15  
His Gly Gly Gln Leu Leu Leu Gln Met  
20 25

<210> 6721  
<211> 8  
<212> PRT  
<213> SARS coronavirus

<400> 6721  
Met His His His Arg Lys His Phe  
1 5

<210> 6722  
<211> 40  
<212> PRT  
<213> SARS coronavirus

<400> 6722  
Leu Gly Leu Thr Ile Leu Ala Ser Arg Arg Asn Lys Leu Met Ala Ile  
1 5 10 15  
Pro Cys Met Leu Thr Thr Phe Ser Gly Gly Thr Gln Ile Leu Ser Ser  
20 25 30

Cys Leu Pro Ile His Ser Leu Thr  
35 40

<210> 6723  
<211> 6  
<212> PRT  
<213> SARS coronavirus

<400> 6723  
Ala Asn Phe Leu Leu Asn  
1 5

<210> 6724  
<211> 4  
<212> PRT  
<213> SARS coronavirus

<400> 6724  
Glu Glu Leu Leu  
1

<210> 6725

SEQLIST-20480.TXT

<211> 10  
<212> PRT  
<213> SARS coronavirus

<400> 6725  
Cys Leu Leu Arg Arg Ile Lys Ser Met Ile  
1 5 10

<210> 6726  
<211> 67  
<212> PRT  
<213> SARS coronavirus

<400> 6726  
Phe Ile Leu Phe Trp Lys Lys Val Gly Leu Ser Leu Glu Lys Thr Thr  
1 5 10 15

Glu Leu Trp Phe Gln Val Ile Phe Leu Leu Thr Thr Lys Arg Thr Cys  
20 25 30

Leu Phe Ser Tyr Tyr Phe Leu Leu Ser Leu Val Val Val Thr Leu Thr  
35 40 45

Gly Ala Pro Leu Leu Met Met Phe Lys Leu Leu Ile Thr Leu Asn Ile  
50 55 60

Leu His Leu  
65

<210> 6727  
<211> 16  
<212> PRT  
<213> SARS coronavirus

<400> 6727  
Gly Gly Phe Thr Ile Leu Met Lys Phe Leu Asp Gln Thr Leu Phe Ile  
1 5 10 15

<210> 6728  
<211> 52  
<212> PRT  
<213> SARS coronavirus

<400> 6728  
Leu Arg Ile Tyr Phe Phe His Phe Ile Leu Met Leu Gln Gly Phe Ile  
1 5 10 15

Leu Leu Ile Ile Arg Leu Ala Thr Leu Ser Tyr Leu Leu Arg Met Val  
20 25 30

Phe Ile Leu Leu Pro Gln Arg Asn Gln Met Leu Ser Val Val Gly Phe  
35 40 45

Leu Val Leu Pro  
50

<210> 6729  
<211> 6  
<212> PRT  
<213> SARS coronavirus

<400> 6729

SEQLIST-20480.TXT

Thr Thr Ser His Ser Arg  
1 5

<210> 6730  
<211> 36  
<212> PRT  
<213> SARS coronavirus

<400> 6730  
Leu Leu Leu Thr Ile Leu Leu Met Leu Leu Tyr Glu His Val Thr Leu  
1 5 10 15

Asn Cys Val Thr Thr Leu Ser Leu Leu Phe Leu Asn Pro Trp Val His  
20 25 30

Arg His Ile Leu  
35

<210> 6731  
<211> 51  
<212> PRT  
<213> SARS coronavirus

<400> 6731  
Tyr Ser Ile Met His Leu Ile Ala Leu Ser Ser Thr Tyr Leu Met Pro  
1 5 10 15

Phe Arg Leu Met Phe Gln Lys Ser Gln Val Ile Leu Asn Thr Tyr Glu  
20 25 30

Ser Leu Cys Leu Lys Ile Lys Met Gly Phe Ser Met Phe Ile Arg Ala  
35 40 45

Ile Asn Leu  
50

<210> 6732  
<211> 10  
<212> PRT  
<213> SARS coronavirus

<400> 6732  
Phe Val Ile Tyr Leu Leu Val Leu Thr Leu  
1 5 10

<210> 6733  
<211> 40  
<212> PRT  
<213> SARS coronavirus

<400> 6733  
Asn Leu Phe Leu Ser Cys Leu Leu Val Leu Thr Leu Gln Ile Leu Glu  
1 5 10 15

Pro Phe Leu Gln Pro Phe His Leu Leu Lys Thr Phe Gly Ala Arg Gln  
20 25 30

Leu Gln Pro Ile Leu Leu Ala Ile  
35 40

<210> 6734  
<211> 56  
<212> PRT



<213> SARS coronavirus

<400> 6734

Ser Gln Leu His Leu Cys Ser Ser Met Met Lys Met Val Gln Ser Gln  
1 5 10 15  
Met Leu Leu Ile Val Leu Lys Ile His Leu Leu Asn Ser Asn Ala Leu  
20 25 30  
Leu Arg Ala Leu Arg Leu Thr Lys Glu Phe Thr Arg Pro Leu Ile Ser  
35 40 45  
Gly Leu Phe Pro Gln Glu Met Leu  
50 55

<210> 6735

<211> 59

<212> PRT

<213> SARS coronavirus

<400> 6735

Asp Ser Leu Ile Leu Gln Thr Cys Val Leu Leu Glu Arg Phe Leu Met  
1 5 10 15  
Leu Leu Asn Ser Leu Leu Ser Met His Gly Arg Glu Lys Lys Phe Leu  
20 25 30  
Ile Val Leu Leu Ile Thr Leu Cys Ser Thr Thr Gln His Phe Phe Gln  
35 40 45  
Pro Leu Ser Ala Met Ala Phe Leu Pro Leu Ser  
50 55

<210> 6736

<211> 13

<212> PRT

<213> SARS coronavirus

<400> 6736

Met Ile Phe Ala Ser Pro Met Ser Met Gln Ile Leu Leu  
1 5 10

<210> 6737

<211> 5

<212> PRT

<213> SARS coronavirus

<400> 6737

Ser Arg Glu Met Met  
1 5

<210> 6738

<211> 80

<212> PRT

<213> SARS coronavirus

<400> 6738

Arg Gln Asp Lys Leu Val Leu Leu Leu Ile Ile Ile Ile Asn Cys Gln  
1 5 10 15  
Met Ile Ser Trp Val Val Ser Leu Leu Gly Ile Leu Gly Thr Leu Met  
20 25 30

SEQLIST-20480.TXT

Leu Leu Gln Leu Val Ile Ile Ile Ile Asn Ile Gly Ile Leu Asp Met  
35 40 45

Ala Ser Leu Gly Pro Leu Arg Glu Thr Tyr Leu Met Cys Leu Ser Pro  
50 55 60

Leu Met Ala Asn Leu Ala Pro His Leu Leu Leu Ile Val Ile Gly His  
65 70 75 80

<210> 6739  
<211> 18  
<212> PRT  
<213> SARS coronavirus

<400> 6739  
Met Ile Met Val Phe Thr Pro Leu Leu Ala Leu Ala Thr Asn Leu Thr  
1 5 10 15

Glu Leu

<210> 6740  
<211> 6  
<212> PRT  
<213> SARS coronavirus

<400> 6740  
Tyr Phe Leu Leu Asn Phe  
1 5

<210> 6741  
<211> 33  
<212> PRT  
<213> SARS coronavirus

<400> 6741  
Met His Arg Pro Arg Phe Val Asp Gln Asn Tyr Pro Leu Thr Leu Leu  
1 5 10 15

Arg Thr Ser Val Ser Ile Leu Ile Leu Met Asp Ser Leu Val Leu Val  
20 25 30

Cys

<210> 6742  
<211> 32  
<212> PRT  
<213> SARS coronavirus

<400> 6742  
Leu Leu Leu Gln Arg Asp Phe Asn His Phe Asn Asn Leu Ala Val Met  
1 5 10 15

Phe Leu Ile Ser Leu Ile Pro Phe Glu Ile Leu Lys His Leu Lys Tyr  
20 25 30

<210> 6743  
<211> 9  
<212> PRT  
<213> SARS coronavirus

SEQLIST-20480.TXT

<400> 6743  
Thr Phe His Leu Ala Leu Leu Gly Val  
1 5

<210> 6744  
<211> 53  
<212> PRT  
<213> SARS coronavirus

<400> 6744  
Leu His Leu Glu Gln Met Leu His Leu Lys Leu Leu Phe Tyr Ile Lys  
1 5 10 15  
Met Leu Thr Ala Leu Met Phe Leu Gln Gln Phe Met Gln Ile Asn Ser  
20 25 30  
His Gln Leu Gly Ala Tyr Ile Leu Leu Glu Thr Met Tyr Ser Arg Leu  
35 40 45  
Lys Gln Ala Val Leu  
50

<210> 6745  
<211> 43  
<212> PRT  
<213> SARS coronavirus

<400> 6745  
Glu Leu Ser Met Ser Thr Leu Leu Met Ser Ala Thr Phe Leu Leu Glu  
1 5 10 15  
Leu Ala Phe Val Leu Val Thr Ile Gln Phe Leu Tyr Tyr Val Val Leu  
20 25 30  
Ala Lys Asn Leu Leu Trp Leu Ile Leu Cys Leu  
35 40

<210> 6746  
<211> 26  
<212> PRT  
<213> SARS coronavirus

<400> 6746  
Val Leu Ile Val Gln Leu Leu Thr Leu Ile Thr Pro Leu Leu Tyr Leu  
1 5 10 15  
Leu Thr Phe Gln Leu Ala Leu Leu Gln Lys  
20 25

<210> 6747  
<211> 9  
<212> PRT  
<213> SARS coronavirus

<400> 6747  
Cys Leu Phe Leu Trp Leu Lys Pro Pro  
1 5

<210> 6748  
<211> 26  
<212> PRT  
<213> SARS coronavirus

SEQLIST-20480.TXT

<400> 6748  
Ile Val Ile Cys Thr Ser Ala Glu Ile Leu Leu Asn Val Leu Ile Cys  
1 5 10 15

Phe Ser Asn Met Val Ala Phe Ala His Asn  
20 25

<210> 6749  
<211> 30  
<212> PRT  
<213> SARS coronavirus

<400> 6749  
Ile Val His Ser Gln Val Leu Leu Leu Asn Arg Ile Ala Thr His Val  
1 5 10 15

Lys Cys Ser Leu Lys Ser Asn Lys Cys Thr Lys Pro Gln Leu  
20 25 30

<210> 6750  
<211> 15  
<212> PRT  
<213> SARS coronavirus

<400> 6750  
Asn Ile Leu Val Val Leu Ile Phe His Lys Tyr Tyr Leu Thr Leu  
1 5 10 15

<210> 6751  
<211> 15  
<212> PRT  
<213> SARS coronavirus

<400> 6751  
Ser Gln Leu Arg Gly Leu Leu Leu Arg Thr Cys Ser Leu Ile Arg  
1 5 10 15

<210> 6752  
<211> 7  
<212> PRT  
<213> SARS coronavirus

<400> 6752  
His Ser Leu Met Leu Ala Ser  
1 5

<210> 6753  
<211> 6  
<212> PRT  
<213> SARS coronavirus

<400> 6753  
Ser Asn Met Ala Asn Ala  
1 5

<210> 6754  
<211> 27  
<212> PRT  
<213> SARS coronavirus

<400> 6754  
Val Ile Leu Met Leu Glu Ile Ser Phe Val Arg Arg Ser Ser Met Asp

1 5 10 15

Leu Gln Cys Cys His Leu Cys Ser Leu Met Ile  
20 25

<210> 6755  
<211> 7  
<212> PRT  
<213> SARS coronavirus

<400> 6755  
Leu Leu Pro Thr Leu Leu Leu  
1 5

<210> 6756  
<211> 81  
<212> PRT  
<213> SARS coronavirus

<400> 6756  
Leu Val Val Leu Pro Leu Leu Asp Gly His Leu Val Leu Ala Leu Leu  
1 5 10 15

Phe Lys Tyr Leu Leu Cys Lys Trp His Ile Gly Ser Met Ala Leu  
20 25 30

Glu Leu Pro Lys Met Phe Ser Met Arg Thr Lys Asn Lys Ser Pro Thr  
35 40 45

Asn Leu Thr Arg Arg Leu Val Lys Phe Lys Asn His Leu Gln Gln His  
50 55 60

Gln Leu His Trp Ala Ser Cys Lys Thr Leu Leu Thr Arg Met Leu Lys  
65 70 75 80

His

<210> 6757  
<211> 17  
<212> PRT  
<213> SARS coronavirus

<400> 6757  
Thr His Leu Leu Asn Asn Leu Ala Leu Ile Leu Val Gln Phe Gln Val  
1 5 10 15

Cys

<210> 6758  
<211> 18  
<212> PRT  
<213> SARS coronavirus

<400> 6758  
Met Ile Ser Phe Arg Asp Leu Ile Lys Ser Arg Arg Arg Tyr Lys Leu  
1 5 10 15

Thr Gly

<210> 6759

SEQLIST-20480.TXT

<211> 11  
<212> PRT  
<213> SARS coronavirus

<400> 6759  
Leu Gln Ala Asp Phe Lys Ala Phe Lys Pro Met  
1 5 10

<210> 6760  
<211> 101  
<212> PRT  
<213> SARS coronavirus

<400> 6760  
Ser Gly Leu Leu Lys Ser Gly Leu Leu Leu Ile Leu Leu Leu Lys  
1 5 10 15  
Cys Leu Ser Val Phe Leu Asp Asn Gln Lys Glu Leu Thr Phe Val Glu  
20 25 30  
Arg Ala Thr Thr Leu Cys Pro Ser His Lys Gln Pro Arg Met Val Leu  
35 40 45  
Ser Ser Tyr Met Ser Arg Met Cys His Pro Arg Arg Gly Thr Ser Pro  
50 55 60  
Gln Arg Gln Gln Phe Val Met Lys Ala Lys His Thr Ser Leu Val Lys  
65 70 75 80  
Val Phe Leu Cys Leu Met Ala Leu Leu Gly Leu Leu His Arg Gly Thr  
85 90 95  
Ser Phe Leu His Lys  
100

<210> 6761  
<211> 78  
<212> PRT  
<213> SARS coronavirus

<400> 6761  
Leu Leu Gln Thr Ile His Leu Ser Gln Glu Ile Val Met Ser Leu Leu  
1 5 10 15  
Ala Ser Leu Thr Thr Gln Phe Met Ile Leu Cys Asn Leu Ser Leu Thr  
20 25 30  
His Ser Lys Lys Ser Trp Thr Ser Thr Ser Lys Ile Ile His His Gln  
35 40 45  
Met Leu Ile Leu Ala Thr Phe Gln Ala Leu Thr Leu Leu Ser Ser Thr  
50 55 60  
Phe Lys Lys Lys Leu Thr Ala Ser Met Arg Ser Leu Lys Ile  
65 70 75

<210> 6762  
<211> 30  
<212> PRT  
<213> SARS coronavirus

<400> 6762  
Met Asn His Ser Leu Thr Phe Lys Asn Trp Glu Asn Met Ser Asn Ile

1 5 10 15

Leu Asn Gly Leu Gly Met Phe Gly Ser Ala Ser Leu Leu Asp  
20 25 30

<210> 6763  
<211> 12  
<212> PRT  
<213> SARS coronavirus

<400> 6763  
Leu Pro Ser Ser Trp Leu Gln Ser Cys Phe Val Ala  
1 5 10

<210> 6764  
<211> 59  
<212> PRT  
<213> SARS coronavirus

<400> 6764  
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Ala Ser Leu Met Arg Met Thr Leu Ser Gln Phe Ser Arg Val Ser Asn  
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Tyr Ile Thr His Lys Arg Thr Tyr Gly Phe Val Tyr Glu Ile Phe Tyr  
35 40 45

Ser Trp Ile Asn Tyr Cys Thr Ala Ser Lys Asn  
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Gln Cys Phe Ser Cys Lys Tyr Cys Ser Cys Tyr Ser Asn Asp Thr Ala  
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Cys Cys Phe Ser Glu Arg Tyr Gln Asn Asn Cys Ala Gln  
35 40 45

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<210> 6767  
<211> 46  
<212> PRT  
<213> SARS coronavirus

<400> 6767  
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1 5 10 15  
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20 25 30

Pro Leu Cys Leu Asp Ile Phe Ser Thr Met His Gln Arg Met  
35 40 45

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<400> 6768  
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Ile Thr Leu

<210> 6769  
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<400> 6769  
Cys Gln Leu Leu Cys Leu Leu Ala His Thr  
1 5 10

<210> 6770  
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<212> PRT  
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<400> 6770  
Leu Leu Tyr Thr Ile  
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<210> 6771  
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<213> SARS coronavirus

<400> 6771  
Gln Cys His Arg Tyr Asn Cys Arg Tyr  
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<210> 6772  
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<400> 6772  
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Phe

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Ala Leu Arg Cys  
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<210> 6774  
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<400> 6774  
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1 5 10 15

<210> 6775  
<211> 10  
<212> PRT  
<213> SARS coronavirus

<400> 6775  
Val Tyr Thr Asn Tyr Tyr Arg His Trp Tyr  
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<210> 6776  
<211> 7  
<212> PRT  
<213> SARS coronavirus

<400> 6776  
Lys Cys Tyr Ile Leu His Leu  
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<210> 6777  
<211> 17  
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Cys

<210> 6778  
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<212> PRT  
<213> SARS coronavirus

<400> 6778  
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<210> 6779  
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Ala Asp Asp Asp Tyr  
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<400> 6780  
 Arg Ala Phe Val Ser Thr Arg Lys  
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<210> 6781  
 <211> 17  
 <212> PRT  
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<400> 6781  
 Val Arg Thr Tyr Val Leu Ile Arg Phe Gly Arg Asn Arg Tyr Val Asn  
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Ser

<210> 6782  
 <211> 31  
 <212> PRT  
 <213> SARS coronavirus

<400> 6782  
 Arg Thr Ser Phe Ser Cys Phe Arg Gly Ile Leu Ala Ser His Thr Ser  
 1 5 10 15

His Pro Tyr Cys Ala Ser Ile Val Cys Val Leu Leu Gln Tyr Cys  
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<210> 6783  
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<400> 6783  
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<210> 6784  
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<400> 6784  
 Lys Ser Glu Leu Phe  
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<210> 6785  
 <211> 242  
 <212> PRT  
 <213> SARS coronavirus

<400> 6785  
 Ser Ser Gly Leu Asn Glu Leu Thr Ile Ile Ile Ile Leu Phe Gly Thr  
 1 5 10 15

Leu Thr Leu Leu Ile Met Ala Asp Asn Gly Thr Ile Thr Val Glu Glu  
 20 25 30

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Leu Lys Gln Leu Leu Glu Gln Trp Asn Leu Val Ile Gly Phe Leu Phe  
35 40 45  
Leu Ala Trp Ile Met Leu Leu Gln Phe Ala Tyr Ser Asn Arg Asn Arg  
50 55 60  
Phe Leu Tyr Ile Ile Lys Leu Val Phe Leu Trp Leu Leu Trp Pro Val  
65 70 75 80  
Thr Leu Ala Cys Phe Val Leu Ala Ala Val Tyr Arg Ile Asn Trp Val  
85 90 95  
Thr Gly Gly Ile Ala Ile Ala Met Ala Cys Ile Val Gly Leu Met Trp  
100 105 110  
Leu Ser Tyr Phe Val Ala Ser Phe Arg Leu Phe Ala Arg Thr Arg Ser  
115 120 125  
Met Trp Ser Phe Asn Pro Glu Thr Asn Ile Leu Leu Asn Val Pro Leu  
130 135 140  
Arg Gly Thr Ile Val Thr Arg Pro Leu Met Glu Ser Glu Leu Val Ile  
145 150 155 160  
Gly Ala Val Ile Ile Arg Gly His Leu Arg Met Ala Gly His Ser Leu  
165 170 175  
Gly Arg Cys Asp Ile Lys Asp Leu Pro Lys Glu Ile Thr Val Ala Thr  
180 185 190  
Ser Arg Thr Leu Ser Tyr Tyr Lys Leu Gly Ala Ser Gln Arg Val Gly  
195 200 205  
Thr Asp Ser Gly Phe Ala Ala Tyr Asn Arg Tyr Arg Ile Gly Asn Tyr  
210 215 220  
Lys Leu Asn Thr Asp His Ala Gly Ser Asn Asp Asn Ile Ala Leu Leu  
225 230 235 240  
val Gln

<210> 6786  
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<212> PRT  
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<400> 6786  
Val Thr Thr Asp Val Ser Ser Cys  
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<210> 6787  
<211> 23  
<212> PRT  
<213> SARS coronavirus

<400> 6787  
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1 5 10 15

Gln Asp Cys Tyr Leu Glu Ser  
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<210> 6788  
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 <213> SARS coronavirus

<400> 6788  
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<210> 6789  
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 <212> PRT  
 <213> SARS coronavirus

<400> 6789  
 Glu Glu Leu Phe Gly Val Arg  
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<210> 6790  
 <211> 12  
 <212> PRT  
 <213> SARS coronavirus

<400> 6790  
 Arg Thr Tyr Gly Val Arg Leu Ser Ile Lys Arg Thr  
 1 5 10

<210> 6791  
 <211> 5  
 <212> PRT  
 <213> SARS coronavirus

<400> 6791  
 Lys Leu Phe Ser Ser  
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<210> 6792  
 <211> 21  
 <212> PRT  
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<400> 6792  
 Leu Tyr Leu His Leu Ala Ser Tyr Ile Thr Ile Arg Ser Val Leu Glu  
 1 5 10 15

Val Arg Leu Tyr Tyr  
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<210> 6793  
 <211> 24  
 <212> PRT  
 <213> SARS coronavirus

<400> 6793  
 Lys Asn Leu Ala His Gln Glu His Thr Arg Ala Ile His His Phe Thr  
 1 5 10 15

Leu Leu Leu Thr Ile Asn Leu His  
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<210> 6794  
 <211> 51  
 <212> PRT

<213> SARS coronavirus

<400> 6794

Leu Ala Leu Ala His Thr Leu Leu Leu Leu Val Leu Thr Val Leu Asp  
1 5 10 15

Ile Pro Ile Ser Cys Val Gln Asp Gln Phe His Gln Asn Phe Ser Ser  
20 25 30

Asp Lys Arg Arg Phe Asn Lys Ser Ser Thr Arg His Phe Phe Ser Leu  
35 40 45

Leu Leu Leu  
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<210> 6795

<211> 12

<212> PRT

<213> SARS coronavirus

<400> 6795

Tyr Phe Ala Ser Pro Leu Arg Glu Arg Gln Asn Glu  
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<210> 6796

<211> 4

<212> PRT

<213> SARS coronavirus

<400> 6796

Ala His Phe Asn  
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<210> 6797

<211> 64

<212> PRT

<213> SARS coronavirus

<400> 6797

Leu Leu Phe Val Leu Phe Ser Leu Ser Ala Ile Pro Cys Phe Asn Asn  
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Ala Tyr Tyr Ile Leu Val Phe Thr Arg Asn Pro Gly Ser Arg Arg Thr  
20 25 30

Leu Tyr Gln Ser Leu Asn Glu His Glu Thr Ser His Cys Phe Asp Leu  
35 40 45

Tyr Phe Ser Met Gln Leu His Met His Cys Ser Thr Ala Leu Cys Ile  
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<210> 6798

<211> 4

<212> PRT

<213> SARS coronavirus

<400> 6798

Thr Ser Cys Ala  
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<210> 6799

<211> 16

SEQLIST-20480.TXT

<212> PRT  
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<400> 6799  
Gly Thr Thr Leu Gly Val Ile Leu Ile Ala Leu Leu Gly Phe Val Leu  
1 5 10 15

<210> 6800  
<211> 32  
<212> PRT  
<213> SARS coronavirus

<400> 6800  
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1 5 10 15  
His Leu Met Leu Leu Ser Thr Val Lys Ile Gln Leu Val Val Arg Leu  
20 25 30

<210> 6801  
<211> 21  
<212> PRT  
<213> SARS coronavirus

<400> 6801  
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1 5 10 15  
Thr Tyr Leu Leu Phe  
20

<210> 6802  
<211> 428  
<212> PRT  
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<400> 6802  
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1 5 10 15  
Arg Ser Ala Pro Arg Ile Thr Phe Gly Gly Pro Thr Asp Ser Thr Asp  
20 25 30  
Asn Asn Gln Asn Gly Gly Arg Asn Gly Ala Arg Pro Lys Gln Arg Arg  
35 40 45  
Pro Gln Gly Leu Pro Asn Asn Thr Ala Ser Trp Phe Thr Ala Leu Thr  
50 55 60  
Gln His Gly Lys Glu Glu Leu Arg Phe Pro Arg Gly Gln Gly Val Pro  
65 70 75 80  
Ile Asn Thr Asn Ser Gly Pro Asp Asp Gln Ile Gly Tyr Tyr Arg Arg  
85 90 95  
Ala Thr Arg Arg Val Arg Gly Gly Asp Gly Lys Met Lys Glu Leu Ser  
100 105 110  
Pro Arg Trp Tyr Phe Tyr Tyr Leu Gly Thr Gly Pro Glu Ala Ser Leu  
115 120 125

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Pro Tyr Gly Ala Asn Lys Glu Gly Ile Val Trp Val Ala Thr Glu Gly  
130 135 140  
Ala Leu Asn Thr Pro Lys Asp His Ile Gly Thr Arg Asn Pro Asn Asn  
145 150 160  
Asn Ala Ala Thr Val Leu Gln Leu Pro Gln Gly Thr Thr Leu Pro Lys  
165 170 175  
Gly Phe Tyr Ala Glu Gly Ser Arg Gly Gly Ser Gln Ala Ser Ser Arg  
180 185 190  
Ser Ser Ser Arg Ser Arg Gly Asn Ser Arg Asn Ser Thr Pro Gly Ser  
195 200 205  
Ser Arg Gly Asn Ser Pro Ala Arg Met Ala Ser Gly Gly Gly Glu Thr  
210 215 220  
Ala Leu Ala Leu Leu Leu Leu Asp Arg Leu Asn Gln Leu Glu Ser Lys  
225 230 235 240  
Val Ser Gly Lys Gly Gln Gln Gln Gln Gly Gln Thr Val Thr Lys Lys  
245 250 255  
Ser Ala Ala Glu Ala Ser Lys Lys Pro Arg Gln Lys Arg Thr Ala Thr  
260 265 270  
Lys Gln Tyr Asn Val Thr Gln Ala Phe Gly Arg Arg Gly Pro Glu Gln  
275 280 285  
Thr Gln Gly Asn Phe Gly Asp Gln Asp Leu Ile Arg Gln Gly Thr Asp  
290 295 300  
Tyr Lys His Trp Pro Gln Ile Ala Gln Phe Ala Pro Ser Ala Ser Ala  
305 310 315 320  
Phe Phe Gly Met Ser Arg Ile Gly Met Glu Val Thr Pro Ser Gly Thr  
325 330 335  
Trp Leu Thr Tyr His Gly Ala Ile Lys Leu Asp Asp Lys Asp Pro Gln  
340 345 350  
Phe Lys Asp Asn Val Ile Leu Leu Asn Lys His Ile Asp Ala Tyr Lys  
355 360 365  
Thr Phe Pro Pro Thr Glu Pro Lys Lys Asp Lys Lys Lys Lys Thr Asp  
370 375 380  
Glu Ala Gln Pro Leu Pro Gln Arg Gln Lys Lys Gln Pro Thr Val Thr  
385 390 395 400  
Leu Leu Pro Ala Ala Asp Met Asp Asp Phe Ser Arg Gln Leu Gln Asn  
405 410 415  
Ser Met Ser Gly Ala Ser Ala Asp Ser Thr Gln Ala  
420 425

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<400> 6803

Thr Leu Met Met Thr Thr Gln Gly Arg Trp Ala Met  
1 5 10

<210> 6804  
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<400> 6804  
Thr Phe Ser Gln Phe Arg Leu Arg Tyr Ile Val Tyr Ser Cys Ala Glu  
1 5 10 15

<210> 6805  
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<400> 6805  
Ile Leu Val Thr Lys Gln His Lys  
1 5

<210> 6806  
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<212> PRT  
<213> SARS coronavirus

<400> 6806  
Leu Thr Leu Ile Ser His Ser Asn Leu  
1 5

<210> 6807  
<211> 28  
<212> PRT  
<213> SARS coronavirus

<400> 6807  
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1 5 10 15

Arg Gly His Ala Glu Tyr Asp Arg Gly Tyr Ser Glu  
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<210> 6808  
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<400> 6808  
Gly Glu Leu Pro Ile Trp Lys Ser Pro Asn Val  
1 5 10

<210> 6809  
<211> 10  
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<400> 6809  
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1 5 10

<210> 6810  
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<212> PRT  
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<400> 6810  
Thr Gln Glu Lys Pro Thr Asn Leu Asp Leu Leu  
1 5 10

<210> 6811  
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<212> PRT  
<213> SARS coronavirus

<400> 6811  
Ile Cys Ser Leu Asn Glu Leu  
1 5

<210> 6812  
<211> 25  
<212> PRT  
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<400> 6812  
Asn Leu Cys Ser Cys Arg Ser Ala Ala Cys Leu Val His Leu Arg Ser  
1 5 10 15

Ile Asn Asn Asn Lys Phe Tyr Cys Arg  
20 25

<210> 6813  
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<400> 6813  
Gln Glu Thr Ser Asn Ser Ser Leu Phe Cys Arg Leu Leu Thr Val Ser  
1 5 10 15

Ser val Leu Gln Ser Ile Ile Ser Ile Pro Arg Phe Arg Pro Gly val  
20 25 30

Thr Glu Arg  
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<210> 6814  
<211> 23  
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<213> SARS coronavirus

<400> 6814  
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Gln Phe Ala Cys Pro Ser Gly  
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<210> 6815  
<211> 19  
<212> PRT  
<213> SARS coronavirus

<400> 6815  
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Gly Gly Thr

<210> 6816  
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 <212> PRT  
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<400> 6816  
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 1 5 10 15

Thr Ala Pro Ala  
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<210> 6817  
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 <212> PRT  
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<400> 6817  
 Thr Ala Leu Cys Val His  
 1 5

<210> 6818  
 <211> 11  
 <212> PRT  
 <213> SARS coronavirus

<400> 6818  
 Cys Leu Lys His Gln Ser Arg Pro Gln Gly Arg  
 1 5 10

<210> 6819  
 <211> 12  
 <212> PRT  
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<400> 6819  
 Ala Gly Cys Arg Asn Gly Arg His Ser Val Arg Ser  
 1 5 10

<210> 6820  
 <211> 24  
 <212> PRT  
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<400> 6820  
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 1 5 10 15

Cys Ile Pro Gln Cys Ser Ser Ser  
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<210> 6821  
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<400> 6821  
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<210> 6822  
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 <212> PRT  
 <213> SARS coronavirus

<400> 6822  
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<400> 6823  
 Arg Ala Trp His  
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<210> 6824  
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<400> 6824  
 Thr Lys Leu Glu His  
 1 5

<210> 6825  
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 <213> SARS coronavirus

<400> 6825  
 Ala Trp Gln Trp Cys Thr Pro  
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<210> 6826  
 <211> 22  
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 <213> SARS coronavirus

<400> 6826  
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 1 5 10 15  
 Pro Arg Trp Val Pro Ser  
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<210> 6827  
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 <212> PRT  
 <213> SARS coronavirus

<400> 6827  
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 Phe Arg Thr Thr  
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<210> 6828  
 <211> 12

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<212>  PRT
<213>  SARS coronavirus

<400>  6828
Leu His Arg Val Glu Glu Arg Cys Leu Leu Leu Pro
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<210>  6829
<211>  5
<212>  PRT
<213>  SARS coronavirus

<400>  6829
Asn Cys Leu Val His
1      5

<210>  6830
<211>  10
<212>  PRT
<213>  SARS coronavirus

<400>  6830
Glu Leu Arg Ala Pro Asp Thr Leu Arg Asn
1      5      10

<210>  6831
<211>  5
<212>  PRT
<213>  SARS coronavirus

<400>  6831
Glu Cys Gln Glu Ile
1      5

<210>  6832
<211>  13
<212>  PRT
<213>  SARS coronavirus

<400>  6832
His Phe Gln Arg Gly Met Pro Lys Val Cys Val Ser Ser
1      5      10

<210>  6833
<211>  10
<212>  PRT
<213>  SARS coronavirus

<400>  6833
Leu Lys Ser Gln Ser His Ser Thr Thr Cys
1      5      10

<210>  6834
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<212>  PRT
<213>  SARS coronavirus

<400>  6834
Lys Glu Lys Asp
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<210>  6835
<211>  18

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<212>    PRT
<213>    SARS coronavirus

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Gly val

<210>    6836
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<213>    SARS coronavirus

<400>    6836
Gln Tyr Ala Leu Val Tyr Leu Asp Glu Met
1          5          10

<210>    6837
<211>    13
<212>    PRT
<213>    SARS coronavirus

<400>    6837
Ser Phe Met Ala Asp Val Arg Leu Ser Glu Ser His Leu
1          5          10

<210>    6838
<211>    4
<212>    PRT
<213>    SARS coronavirus

<400>    6838
Thr Leu Trp His
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<210>    6839
<211>    4
<212>    PRT
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<400>    6839
Lys Phe Ser Tyr
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<210>    6840
<211>    10
<212>    PRT
<213>    SARS coronavirus

<400>    6840
Arg Thr Tyr Tyr Met Trp Val Pro Thr Tyr
1          5          10

<210>    6841
<211>    17
<212>    PRT
<213>    SARS coronavirus

<400>    6841
Cys Cys Ser Glu Asn Ala Met Ser Cys Leu Ser Arg Pro Arg Asp Trp
1          5          10          15

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Thr

<210> 6842  
 <211> 10  
 <212> PRT  
 <213> SARS coronavirus

<400> 6842  
 Cys Cys Arg Leu Ser Gln Pro Leu Lys His  
 1 5 10

<210> 6843  
 <211> 7  
 <212> PRT  
 <213> SARS coronavirus

<400> 6843  
 Asn Ser Thr Pro Gln Gly Arg  
 1 5

<210> 6844  
 <211> 13  
 <212> PRT  
 <213> SARS coronavirus

<400> 6844  
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 1 5 10

<210> 6845  
 <211> 8  
 <212> PRT  
 <213> SARS coronavirus

<400> 6845  
 Ala Cys Leu Leu Gly Ser Ser Cys  
 1 5

<210> 6846  
 <211> 10  
 <212> PRT  
 <213> SARS coronavirus

<400> 6846  
 Tyr Trp Leu Arg Pro Tyr Trp His Tyr Trp  
 1 5 10

<210> 6847  
 <211> 6  
 <212> PRT  
 <213> SARS coronavirus

<400> 6847  
 Gln Cys Gly Asp Leu Glu  
 1 5

<210> 6848  
 <211> 4  
 <212> PRT  
 <213> SARS coronavirus

SEQLIST-20480.TXT

<400> 6848  
Asp Thr Glu Ser  
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<210> 6849  
<211> 8  
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<213> SARS coronavirus

<400> 6849  
His Cys Trp Arg Phe Ser Phe Glu  
1 5

<210> 6850  
<211> 17  
<212> PRT  
<213> SARS coronavirus

<400> 6850  
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1 5 10 15

Tyr

<210> 6851  
<211> 5  
<212> PRT  
<213> SARS coronavirus

<400> 6851  
His Tyr Lys Glu Ser  
1 5

<210> 6852  
<211> 8  
<212> PRT  
<213> SARS coronavirus

<400> 6852  
Leu Gln Val Phe Gln Asn His Cys  
1 5

<210> 6853  
<211> 42  
<212> PRT  
<213> SARS coronavirus

<400> 6853  
Ser Tyr Gln Gly Lys Ala Arg Lys Arg Cys Leu Glu His Trp Thr Thr  
1 5 10 15

Glu Ile Ser Phe Asn Thr Thr Val Trp Phe Ser Leu Thr Gly Cys Trp  
20 25 30

Cys Tyr Gln Ile Asn Phe Cys Ala His Thr  
35 40

<210> 6854  
<211> 7  
<212> PRT  
<213> SARS coronavirus

SEQLIST-20480.TXT

<400> 6854  
Cys Ser Lys Pro Leu Asn Ser  
1 5

<210> 6855  
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<212> PRT  
<213> SARS coronavirus

<400> 6855  
Phe Ala Lys Ser Ser Cys His His Thr  
1 5

<210> 6856  
<211> 39  
<212> PRT  
<213> SARS coronavirus

<400> 6856  
Thr Val Ile Thr Ser Cys Arg Arg His Gly Leu Tyr Phe Arg Pro Ala  
1 5 10 15

His Gln Gln Cys His Tyr Tyr Gly Ile Cys Asn Trp Trp Ser Cys Thr  
20 25 30

Thr Asp Phe Ser Val Val Val  
35

<210> 6857  
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<212> PRT  
<213> SARS coronavirus

<400> 6857  
Ser Phe Gly His Tyr Cys  
1 5

<210> 6858  
<211> 6  
<212> PRT  
<213> SARS coronavirus

<400> 6858  
Lys Thr Gln Ala Tyr Leu  
1 5

<210> 6859  
<211> 17  
<212> PRT  
<213> SARS coronavirus

<400> 6859  
Ile Ser Gln Gly Cys Leu Gly Asp Ser Gln Ile Ser His Tyr Arg Cys  
1 5 10 15

Phe

<210> 6860  
<211> 11  
<212> PRT  
<213> SARS coronavirus



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<400> 6860  
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1 5 10

<210> 6861  
<211> 9  
<212> PRT  
<213> SARS coronavirus

<400> 6861  
His Gln Gly Leu Cys Lys Met Leu His  
1 5

<210> 6862  
<211> 7  
<212> PRT  
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<400> 6862  
Gln Gly Thr Arg Asn Val His  
1 5

<210> 6863  
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<212> PRT  
<213> SARS coronavirus

<400> 6863  
Ser Ser His Tyr Arg Trp Arg Lys Val Ala Ile Thr Gln Leu Arg  
1 5 10 15

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SEQLIST-20480.TXT

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Tyr Ala Ala Cys  
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Ser Ser His Cys Leu  
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Ala Cys Leu Leu Phe Leu Arg Leu Leu Leu Leu Leu Leu Trp Pro  
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<210> 7082
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Gly Cys Cys Arg His  
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Pro Asn Val Gln Thr Gly Lys Ile  
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Gln His Tyr Gln Gln Cys Ala  
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His Gly Cys Cys Pro  
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Lys Ser Gln Leu Ser Cys  
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Thr Asn Ser Leu Tyr  
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<210> 7104  
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<210> 7105  
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<400> 7105  
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1              5              10              15

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Val Cys Tyr Arg His Thr Lys Arg Ala
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<210> 7108
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1              5              10

<210> 7109
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1              5              10              15

Lys Cys Tyr Arg Ser Thr Cys Gln Phe Asn Cys Ala Phe Leu Leu Cys
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Phe Cys Ser Arg Pro Cys
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<210> 7110
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<400> 7110
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Val Val Tyr Thr His Trp Tyr Arg Thr Gly Asn Tyr Cys Asn Thr Arg
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Ser

<210> 7111
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<400> 7113  
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<400> 7114  
Pro Ser Gly Phe Tyr Thr  
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1 5 10 15

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Gly Thr Ser Thr Asp Val Val Tyr Arg Ala Phe Asp Ile Tyr Asn Glu  
35 40 45

Lys Val Ala Gly Phe Ala Lys Phe Leu Lys Thr Asn Cys Cys Arg Phe  
50 55 60

Gln Glu Lys Asp Glu Glu Gly Asn Leu Leu Asp Ser Tyr Phe Val Val  
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Lys Arg His Thr Met Ser Asn Tyr Gln His Glu Glu Thr Ile Tyr Asn



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85

90

95

Leu Val Lys Asp Cys Pro Ala Val Ala Val His Asp Phe Phe Lys Phe  
100 105 110  
Arg Val Asp Gly Asp Met Val Pro His Ile Ser Arg Gln Arg Leu Thr  
115 120 125  
Lys Tyr Thr Met Ala Asp Leu Val Tyr Ala Leu Arg His Phe Asp Glu  
130 135 140  
Gly Asn Cys Asp Thr Leu Lys Glu Ile Leu Val Thr Tyr Asn Cys Cys  
145 150 155 160  
Asp Asp Asp Tyr Phe Asn Lys Lys Asp Trp Tyr Asp Phe Val Glu Asn  
165 170 175  
Pro Asp Ile Leu Arg Val Tyr Ala Asn Leu Gly Glu Arg Val Arg Gln  
180 185 190  
Ser Leu Leu Lys Thr Val Gln Phe Cys Asp Ala Met Arg Asp Ala Gly  
195 200 205  
Ile Val Gly Val Leu Thr Leu Asp Asn Gln Asp Leu Asn Gly Asn Trp  
210 215 220  
Tyr Asp Phe Gly Asp Phe Val Gln Val Ala Pro Gly Cys Gly Val Pro  
225 230 235 240  
Ile Val Asp Ser Tyr Tyr Ser Leu Leu Met Pro Ile Leu Thr Leu Thr  
245 250 255  
Arg Ala Leu Ala Ala Glu Ser His Met Asp Ala Asp Leu Ala Lys Pro  
260 265 270  
Leu Ile Lys Trp Asp Leu Leu Lys Tyr Asp Phe Thr Glu Glu Arg Leu  
275 280 285  
Cys Leu Phe Asp Arg Tyr Phe Lys Tyr Trp Asp Gln Thr Tyr His Pro  
290 295 300  
Asn Cys Ile Asn Cys Leu Asp Asp Arg Cys Ile Leu His Cys Ala Asn  
305 310 315 320  
Phe Asn Val Leu Phe Ser Thr Val Phe Pro Pro Thr Ser Phe Gly Pro  
325 330 335  
Leu Val Arg Lys Ile Phe Val Asp Gly Val Pro Phe Val Val Ser Thr  
340 345 350  
Gly Tyr His Phe Arg Glu Leu Gly Val Val His Asn Gln Asp Val Asn  
355 360 365  
Leu His Ser Ser Arg Leu Ser Phe Lys Glu Leu Leu Val Tyr Ala Ala  
370 375 380  
Asp Pro Ala Met His Ala Ala Ser Gly Asn Leu Leu Leu Asp Lys Arg  
385 390 395 400  
Thr Thr Cys Phe Ser Val Ala Ala Leu Thr Asn Asn Val Ala Phe Gln  
405 410 415  
Thr Val Lys Pro Gly Asn Phe Asn Lys Asp Phe Tyr Asp Phe Ala Val

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420

425

430

Ser Lys Gly Phe Phe Lys Glu Gly Ser Ser Val Glu Leu Lys His Phe  
435 440 445  
Phe Phe Ala Gln Asp Gly Asn Ala Ala Ile Ser Asp Tyr Asp Tyr Tyr  
450 455 460  
Arg Tyr Asn Leu Pro Thr Met Cys Asp Ile Arg Gln Leu Leu Phe Val  
465 470 475 480  
Val Glu Val Val Asp Lys Tyr Phe Asp Cys Tyr Asp Gly Gly Cys Ile  
485 490 495  
Asn Ala Asn Gln Val Ile Val Asn Asn Leu Asp Lys Ser Ala Gly Phe  
500 505 510  
Pro Phe Asn Lys Trp Gly Lys Ala Arg Leu Tyr Tyr Asp Ser Met Ser  
515 520 525  
Tyr Glu Asp Gln Asp Ala Leu Phe Ala Tyr Thr Lys Arg Asn Val Ile  
530 535 540  
Pro Thr Ile Thr Gln Met Asn Leu Lys Tyr Ala Ile Ser Ala Lys Asn  
545 550 555 560  
Arg Ala Arg Thr Val Ala Gly Val Ser Ile Cys Ser Thr Met Thr Asn  
565 570 575  
Arg Gln Phe His Gln Lys Leu Leu Lys Ser Ile Ala Ala Thr Arg Gly  
580 585 590  
Ala Thr Val Val Ile Gly Thr Ser Lys Phe Tyr Gly Gly Trp His Asn  
595 600 605  
Met Leu Lys Thr Val Tyr Ser Asp Val Glu Thr Pro His Leu Met Gly  
610 615 620  
Trp Asp Tyr Pro Lys Cys Asp Arg Ala Met Pro Asn Met Leu Arg Ile  
625 630 635 640  
Met Ala Ser Leu Val Leu Ala Arg Lys His Asn Thr Cys Cys Asn Leu  
645 650 655  
Ser His Arg Phe Tyr Arg Leu Ala Asn Glu Cys Ala Gln Val Leu Ser  
660 665 670  
Glu Met Val Met Cys Gly Gly Ser Leu Tyr Val Lys Pro Gly Gly Thr  
675 680 685  
Ser Ser Gly Asp Ala Thr Thr Ala Tyr Ala Asn Ser Val Phe Asn Ile  
690 695 700  
Cys Gln Ala Val Thr Ala Asn Val Asn Ala Leu Leu Ser Thr Asp Gly  
705 710 715 720  
Asn Lys Ile Ala Asp Lys Tyr Val Arg Asn Leu Gln His Arg Leu Tyr  
725 730 735  
Glu Cys Leu Tyr Arg Asn Arg Asp Val Asp His Glu Phe Val Asp Glu  
740 745 750  
Phe Tyr Ala Tyr Leu Arg Lys His Phe Ser Met Met Ile Leu Ser Asp

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755	760	765
Asp Ala Val Val Cys Tyr Asn Ser Asn Tyr Ala Ala Gln Gly Leu Val		
770	775	780
Ala Ser Ile Lys Asn Phe Lys Ala Val Leu Tyr Tyr Gln Asn Asn Val		
785	790	795
Phe Met Ser Glu Ala Lys Cys Trp Thr Glu Thr Asp Leu Thr Lys Gly		
	805	810
Pro His Glu Phe Cys Ser Gln His Thr Met Leu Val Lys Gln Gly Asp		
	820	825
Asp Tyr Val Tyr Leu Pro Tyr Pro Asp Pro Ser Arg Ile Leu Gly Ala		
	835	840
Gly Cys Phe Val Asp Asp Ile Val Lys Thr Asp Gly Thr Leu Met Ile		
	850	855
Glu Arg Phe Val Ser Leu Ala Ile Asp Ala Tyr Pro Leu Thr Lys His		
	865	870
Pro Asn Gln Glu Tyr Ala Asp Val Phe His Leu Tyr Leu Gln Tyr Ile		
	885	890
Arg Lys Leu His Asp Glu Leu Thr Gly His Met Leu Asp Met Tyr Ser		
	900	905
Val Met Leu Thr Asn Asp Asn Thr Ser Arg Tyr Trp Glu Pro Glu Phe		
	915	920
Tyr Glu Ala Met Tyr Thr Pro His Thr Val Leu Gln Ala Val Gly Ala		
	930	935
Cys Val Leu Cys Asn Ser Gln Thr Ser Leu Arg Cys Gly Ala Cys Ile		
	945	950
Arg Arg Pro Phe Leu Cys Cys Lys Cys Cys Tyr Asp His Val Ile Ser		
	965	970
Thr Ser His Lys Leu Val Leu Ser Val Asn Pro Tyr Val Cys Asn Ala		
	980	985
Pro Gly Cys Asp Val Thr Asp Val Thr Gln Leu Tyr Leu Gly Gly Met		
	995	1000
Ser Tyr Tyr Cys Lys Ser His Lys Pro Pro Ile Ser Phe Pro Leu Cys		
	1010	1015
Ala Asn Gly Gln Val Phe Gly Leu Tyr Lys Asn Thr Cys Val Gly Ser		
	1025	1030
Asp Asn Val Thr Asp Phe Asn Ala Ile Ala Thr Cys Asp Trp Thr Asn		
	1045	1050
Ala Gly Asp Tyr Ile Leu Ala Asn Thr Cys Thr Glu Arg Leu Lys Leu		
	1060	1065
Phe Ala Ala Glu Thr Leu Lys Ala Thr Glu Glu Thr Phe Lys Leu Ser		
	1075	1080
Tyr Gly Ile Ala Thr Val Arg Glu Val Leu Ser Asp Arg Glu Leu His		

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1090	1095	1100
Leu Ser Trp Glu Val	Gly Lys Pro Arg Pro	Pro Leu Asn Arg Asn Tyr
1105	1110	1115
Val Phe Thr Gly Tyr	Arg Val Thr Lys Asn Ser Lys Val	Gln Ile Gly
	1125	1130
Glu Tyr Thr Phe Glu	Lys Gly Asp Tyr Gly Asp Ala Val	Val Tyr Arg
	1140	1145
Gly Thr Thr Thr Tyr	Lys Leu Asn Val Gly Asp Tyr Phe	Val Leu Thr
	1155	1160
Ser His Thr Val Met	Pro Leu Ser Ala Pro Thr Leu	Val Pro Gln Glu
	1170	1175
His Tyr Val Arg Ile	Thr Gly Leu Tyr Pro Thr Leu	Asn Ile Ser Asp
	1185	1190
Glu Phe Ser Ser Asn	Val Ala Asn Tyr Gln Lys Val Gly	Met Gln Lys
	1205	1210
Tyr Ser Thr Leu Gln	Gly Pro Pro Gly Thr Gly Lys Ser	His Phe Ala
	1220	1225
Ile Gly Leu Ala Leu	Tyr Tyr Pro Ser Ala Arg Ile Val	Tyr Thr Ala
	1235	1240
Cys Ser His Ala Ala	Val Asp Ala Leu Cys Glu Lys Ala	Leu Lys Tyr
	1250	1255
Leu Pro Ile Asp Lys	Cys Ser Arg Ile Ile Pro Ala Arg	Ala Arg Val
	1265	1270
Glu Cys Phe Asp Lys	Phe Lys Val Asn Ser Thr Leu Glu	Gln Tyr Val
	1285	1290
Phe Cys Thr Val Asn	Ala Leu Pro Glu Thr Thr Ala Asp	Ile Val Val
	1300	1305
Phe Asp Glu Ile Ser	Met Ala Thr Asn Tyr Asp Leu Ser	Val Val Asn
	1315	1320
Ala Arg Leu Arg Ala	Lys His Tyr Val Tyr Ile Gly Asp	Pro Ala Gln
	1330	1335
Leu Pro Ala Pro Arg	Thr Leu Leu Thr Lys Gly Thr Leu	Glu Pro Glu
	1345	1350
Tyr Phe Asn Ser Val	Cys Arg Leu Met Lys Thr Ile Gly	Pro Asp Met
	1365	1370
Phe Leu Gly Thr Cys	Arg Arg Cys Pro Ala Glu Ile Val	Asp Thr Val
	1380	1385
Ser Ala Leu Val Tyr	Asp Asn Lys Leu Lys Ala His Lys	Asp Lys Ser
	1395	1400
Ala Gln Cys Phe Lys	Met Phe Tyr Lys Gly Val Ile Thr	His Asp Val
	1410	1415
Ser Ser Ala Ile Asn	Arg Pro Gln Ile Gly Val Val Arg	Glu Phe Leu

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1425                      1430                      1435                      1440

Thr Arg Asn Pro Ala Trp Arg Lys Ala Val Phe Ile Ser Pro Tyr Asn  
1445                      1450                      1455

Ser Gln Asn Ala Val Ala Ser Lys Ile Leu Gly Leu Pro Thr Gln Thr  
1460                      1465                      1470

Val Asp Ser Ser Gln Gly Ser Glu Tyr Asp Tyr Val Ile Phe Thr Gln  
1475                      1480                      1485

Thr Thr Glu Thr Ala His Ser Cys Asn Val Asn Arg Phe Asn Val Ala  
1490                      1495                      1500

Ile Thr Arg Ala Lys Ile Gly Ile Leu Cys Ile Met Ser Asp Arg Asp  
1505                      1510                      1515                      1520

Leu Tyr Asp Lys Leu Gln Phe Thr Ser Leu Glu Ile Pro Arg Arg Asn  
1525                      1530                      1535

Val Ala Thr Leu Gln Ala Glu Asn Val Thr Gly Leu Phe Lys Asp Cys  
1540                      1545                      1550

Ser Lys Ile Ile Thr Gly Leu His Pro Thr Gln Ala Pro Thr His Leu  
1555                      1560                      1565

Ser Val Asp Ile Lys Phe Lys Thr Glu Gly Leu Cys Val Asp Ile Pro  
1570                      1575                      1580

Gly Ile Pro Lys Asp Met Thr Tyr Arg Arg Leu Ile Ser Met Met Gly  
1585                      1590                      1595                      1600

Phe Lys Met Asn Tyr Gln Val Asn Gly Tyr Pro Asn Met Phe Ile Thr  
1605                      1610                      1615

Arg Glu Glu Ala Ile Arg His Val Arg Ala Trp Ile Gly Phe Asp Val  
1620                      1625                      1630

Glu Gly Cys His Ala Thr Arg Asp Ala Val Gly Thr Asn Leu Pro Leu  
1635                      1640                      1645

Gln Leu Gly Phe Ser Thr Gly Val Asn Leu Val Ala Val Pro Thr Gly  
1650                      1655                      1660

Tyr Val Asp Thr Glu Asn Asn Thr Glu Phe Thr Arg Val Asn Ala Lys  
1665                      1670                      1675                      1680

Pro Pro Pro Gly Asp Gln Phe Lys His Leu Ile Pro Leu Met Tyr Lys  
1685                      1690                      1695

Gly Leu Pro Trp Asn Val Val Arg Ile Lys Ile Val Gln Met Leu Ser  
1700                      1705                      1710

Asp Thr Leu Lys Gly Leu Ser Asp Arg Val Val Phe Val Leu Trp Ala  
1715                      1720                      1725

His Gly Phe Glu Leu Thr Ser Met Lys Tyr Phe Val Lys Ile Gly Pro  
1730                      1735                      1740

Glu Arg Thr Cys Cys Leu Cys Asp Lys Arg Ala Thr Cys Phe Ser Thr  
1745                      1750                      1755                      1760

Ser Ser Asp Thr Tyr Ala Cys Trp Asn His Ser Val Gly Phe Asp Tyr

SEQLIST-20480.TXT

1765		1770	1775
Val Tyr Asn Pro Phe Met Ile Asp	Val Gln Gln Trp Gly Phe Thr Gly		
1780	1785	1790	
Asn Leu Gln Ser Asn His Asp	Gln His Cys Gln Val His Gly Asn Ala		
1795	1800	1805	
His Val Ala Ser Cys Asp	Ala Ile Met Thr Arg Cys Leu Ala Val His		
1810	1815	1820	
Glu Cys Phe Val Lys Arg Val Asp Trp Ser	Val Glu Tyr Pro Ile Ile		
1825	1830	1835	1840
Gly Asp Glu Leu Arg Val Asn Ser Ala	Cys Arg Lys Val Gln His Met		
1845	1850	1855	
Val Val Lys Ser Ala Leu Leu Ala	Asp Lys Phe Pro Val Leu His Asp		
1860	1865	1870	
Ile Gly Asn Pro Lys Ala Ile	Lys Cys Val Pro Gln Ala Glu Val Glu		
1875	1880	1885	
Trp Lys Phe Tyr Asp Ala	Gln Pro Cys Ser Asp Lys Ala Tyr Lys Ile		
1890	1895	1900	
Glu Glu Leu Phe Tyr Ser Tyr Ala Thr His	His Asp Lys Phe Thr Asp		
1905	1910	1915	1920
Gly Val Cys Leu Phe Trp Asn Cys Asn	Val Asp Arg Tyr Pro Ala Asn		
1925	1930	1935	
Ala Ile Val Cys Arg Phe Asp Thr	Arg Val Leu Ser Asn Leu Asn Leu		
1940	1945	1950	
Pro Gly Cys Asp Gly Gly Ser	Leu Tyr Val Asn Lys His Ala Phe His		
1955	1960	1965	
Thr Pro Ala Phe Asp Lys Ser Ala Phe Thr	Asn Leu Lys Gln Leu Pro		
1970	1975	1980	
Phe Phe Tyr Tyr Ser Asp Ser Pro Cys Glu	Ser His Gly Lys Gln Val		
1985	1990	1995	2000
Val Ser Asp Ile Asp Tyr Val Pro Leu	Lys Ser Ala Thr Cys Ile Thr		
2005	2010	2015	
Arg Cys Asn Leu Gly Gly Ala Val	Cys Arg His His Ala Asn Glu Tyr		
2020	2025	2030	
Arg Gln Tyr Leu Asp Ala Tyr Asn Met Met	Ile Ser Ala Gly Phe Ser		
2035	2040	2045	
Leu Trp Ile Tyr Lys Gln Phe Asp Thr Tyr	Asn Leu Trp Asn Thr Phe		
2050	2055	2060	
Thr Arg Leu Gln Ser Leu Glu Asn Val Ala	Tyr Asn Val Val Asn Lys		
2065	2070	2075	2080
Gly His Phe Asp Gly His Ala Gly Glu	Ala Pro Val Ser Ile Ile Asn		
2085	2090	2095	
Asn Ala Val Tyr Thr Lys Val Asp Gly	Ile Asp Val Glu Ile Phe Glu		

SEQLIST-20480.TXT

2100 2105 2110

Asn Lys Thr Thr Leu Pro Val Asn Val Ala Phe Glu Leu Trp Ala Lys  
2115 2120 2125

Arg Asn Ile Lys Pro Val Pro Glu Ile Lys Ile Leu Asn Asn Leu Gly  
2130 2135 2140

Val Asp Ile Ala Ala Asn Thr Val Ile Trp Asp Tyr Lys Arg Glu Ala  
2145 2150 2160

Pro Ala His Val Ser Thr Ile Gly Val Cys Thr Met Thr Asp Ile Ala  
2165 2170 2175

Lys Lys Pro Thr Glu Ser Ala Cys Ser Ser Leu Thr Val Leu Phe Asp  
2180 2185 2190

Gly Arg Val Glu Gly Gln Val Asp Leu Phe Arg Asn Ala Arg Asn Gly  
2195 2200 2205

Val Leu Ile Thr Glu Gly Ser Val Lys Gly Leu Thr Pro Ser Lys Gly  
2210 2215 2220

Pro Ala Gln Ala Ser Val Asn Gly Val Thr Leu Ile Gly Glu Ser Val  
2225 2230 2235 2240

Lys Thr Gln Phe Asn Tyr Phe Lys Lys Val Asp Gly Ile Ile Gln Gln  
2245 2250 2255

Leu Pro Glu Thr Tyr Phe Thr Gln Ser Arg Asp Leu Glu Asp Phe Lys  
2260 2265 2270

Pro Arg Ser Gln Met Glu Thr Asp Phe Leu Glu Leu Ala Met Asp Glu  
2275 2280 2285

Phe Ile Gln Arg Tyr Lys Leu Glu Gly Tyr Ala Phe Glu His Ile Val  
2290 2295 2300

Tyr Gly Asp Phe Ser His Gly Gln Leu Gly Gly Leu His Leu Met Ile  
2305 2310 2315 2320

Gly Leu Ala Lys Arg Ser Gln Asp Ser Pro Leu Lys Leu Glu Asp Phe  
2325 2330 2335

Ile Pro Met Asp Ser Thr Val Lys Asn Tyr Phe Ile Thr Asp Ala Gln  
2340 2345 2350

Thr Gly Ser Ser Lys Cys Val Cys Ser Val Ile Asp Leu Leu Leu Asp  
2355 2360 2365

Asp Phe Val Glu Ile Ile Lys Ser Gln Asp Leu Ser Val Ile Ser Lys  
2370 2375 2380

Val Val Lys Val Thr Ile Asp Tyr Ala Glu Ile Ser Phe Met Leu Trp  
2385 2390 2395 2400

Cys Lys Asp Gly His Val Glu Thr Phe Tyr Pro Lys Leu Gln Ala Ser  
2405 2410 2415

Arg Ala Trp Gln Pro Gly Val Ala Met Pro Asn Leu Tyr Lys Met Gln  
2420 2425 2430

Arg Met Leu Leu Glu Lys Cys Asp Leu Gln Asn Tyr Gly Glu Asn Ala

SEQLIST-20480.TXT

2435 2440 2445  
Val Ile Pro Lys Gly Ile Met Met Asn Val Ala Lys Tyr Thr Gln Leu  
2450 2455 2460  
Cys Gln Tyr Leu Asn Thr Leu Thr Leu Ala Val Pro Tyr Asn Met Arg  
2465 2470 2475 2480  
Val Ile His Phe Gly Ala Gly Ser Asp Lys Gly Val Ala Pro Gly Thr  
2485 2490 2495  
Ala Val Leu Arg Gln Trp Leu Pro Thr Gly Thr Leu Leu Val Asp Ser  
2500 2505 2510  
Asp Leu Asn Asp Phe Val Ser Asp Ala Tyr Ser Thr Leu Ile Gly Asp  
2515 2520 2525  
Cys Ala Thr Val His Thr Ala Asn Lys Trp Asp Leu Ile Ile Ser Asp  
2530 2535 2540  
Met Tyr Asp Pro Arg Thr Lys His Val Thr Lys Glu Asn Asp Ser Lys  
2545 2550 2555 2560  
Glu Gly Phe Phe Thr Tyr Leu Cys Gly Phe Ile Lys Gln Lys Leu Ala  
2565 2570 2575  
Leu Gly Gly Ser Ile Ala Val Lys Ile Thr Glu His Ser Trp Asn Ala  
2580 2585 2590  
Asp Leu Tyr Lys Leu Met Gly His Phe Ser Trp Trp Thr Ala Phe Val  
2595 2600 2605  
Thr Asn Val Asn Ala Ser Ser Ser Glu Ala Phe Leu Ile Gly Ala Asn  
2610 2615 2620  
Tyr Leu Gly Lys Pro Lys Glu Gln Ile Asp Gly Tyr Thr Met His Ala  
2625 2630 2635 2640  
Asn Tyr Ile Phe Trp Arg Asn Thr Asn Pro Ile Gln Leu Ser Ser Tyr  
2645 2650 2655  
Ser Leu Phe Asp Met Ser Lys Phe Pro Leu Lys Leu Arg Gly Thr Ala  
2660 2665 2670  
Val Met Ser Leu Lys Glu Asn Gln Ile Asn Asp Met Ile Tyr Ser Leu  
2675 2680 2685  
Leu Glu Lys Gly Arg Leu Ile Ile Arg Glu Asn Asn Arg Val Val Val  
2690 2695 2700  
Ser Ser Asp Ile Leu Val Asn Asn  
2705 2710

<210> 7117  
<211> 1257  
<212> PRT  
<213> SARS coronavirus

<400> 7117  
Thr Asn Met Phe Ile Phe Leu Leu Phe Leu Thr Leu Thr Ser Gly Ser  
1 5 10 15

Asp Leu Asp Arg Cys Thr Thr Phe Asp Asp Val Gln Ala Pro Asn Tyr



SEQLIST-20480.TXT

20	25	30
Thr Gln His 35 Thr Ser Ser Met Arg 40 Gly Val Tyr Tyr Pro 45 Asp Glu Ile		
Phe Arg Ser Asp Thr Leu Tyr 55 Leu Thr Gln Asp Leu 60 Phe Leu Pro Phe		
Tyr 65 Ser Asn Val Thr Gly 70 Phe His Thr Ile Asn 75 His Thr Phe Gly Asn 80		
Pro Val Ile Pro Phe 85 Lys Asp Gly Ile Tyr 90 Phe Ala Ala Thr Glu 95 Lys		
Ser Asn Val Val 100 Arg Gly Trp Val Phe 105 Gly Ser Thr Met Asn 110 Asn Lys		
Ser Gln Ser 115 Val Ile Ile Ile Asn 120 Asn Ser Thr Asn Val 125 Val Ile Arg		
Ala Cys 130 Asn Phe Glu Leu Cys 135 Asp Asn Pro Phe Phe 140 Ala Val Ser Lys		
Pro Met Gly Thr Gln 150 His Thr Met Ile Phe 155 Asp Asn Ala Phe Asn 160		
Cys Thr Phe Glu Tyr 165 Ile Ser Asp Ala Phe 170 Ser Leu Asp Val Ser Glu 175		
Lys Ser Gly Asn 180 Phe Lys His Leu Arg 185 Glu Phe Val Phe Lys 190 Asn Lys		
Asp Gly Phe 195 Leu Tyr Val Tyr Lys 200 Gly Tyr Gln Pro Ile 205 Asp Val Val		
Arg Asp Leu Pro Ser Gly Phe 215 Asn Thr Leu Lys Pro 220 Ile Phe Lys Leu		
Pro Leu Gly Ile Asn Ile 230 Thr Asn Phe Arg Ala 235 Ile Leu Thr Ala Phe 240		
Ser Pro Ala Gln Asp 245 Ile Trp Gly Thr Ser 250 Ala Ala Ala Tyr Phe Val 255		
Gly Tyr Leu Lys 260 Pro Thr Thr Phe Met 265 Leu Lys Tyr Asp Glu 270 Asn Gly		
Thr Ile Thr 275 Asp Ala Val Asp Cys 280 Ser Gln Asn Pro Leu 285 Ala Glu Leu		
Lys Cys 290 Ser Val Lys Ser Phe 295 Glu Ile Asp Lys Gly 300 Ile Tyr Gln Thr		
Ser Asn Phe Arg Val Val 310 Pro Ser Gly Asp Val 315 Val Arg Phe Pro Asn 320		
Ile Thr Asn Leu Cys 325 Pro Phe Gly Glu Val 330 Phe Asn Ala Thr Lys 335 Phe		
Pro Ser Val Tyr 340 Ala Trp Glu Arg Lys 345 Lys Ile Ser Asn Cys 350 Val Ala		
Asp Tyr Ser Val Leu Tyr Asn Ser Thr Phe Phe Ser Thr Phe Lys Cys		

SEQLIST-20480.TXT

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355                               360                               365
Tyr Gly Val Ser Ala Thr Lys Leu Asn Asp Leu Cys Phe Ser Asn Val
370 375 380
Tyr Ala Asp Ser Phe Val Val Lys Gly Asp Asp Val Arg Gln Ile Ala
385 390 395
Pro Gly Gln Thr Gly Val Ile Ala Asp Tyr Asn Tyr Lys Leu Pro Asp
405 410 415
Asp Phe Met Gly Cys Val Leu Ala Trp Asn Thr Arg Asn Ile Asp Ala
420 425 430
Thr Ser Thr Gly Asn Tyr Asn Tyr Lys Tyr Arg Tyr Leu Arg His Gly
435 440 445
Lys Leu Arg Pro Phe Glu Arg Asp Ile Ser Asn Val Pro Phe Ser Pro
450 455 460
Asp Gly Lys Pro Cys Thr Pro Pro Ala Leu Asn Cys Tyr Trp Pro Leu
465 470 475
Asn Asp Tyr Gly Phe Tyr Thr Thr Thr Gly Ile Gly Tyr Gln Pro Tyr
485 490 495
Arg Val Val Val Leu Ser Phe Glu Leu Leu Asn Ala Pro Ala Thr Val
500 505 510
Cys Gly Pro Lys Leu Ser Thr Asp Leu Ile Lys Asn Gln Cys Val Asn
515 520 525
Phe Asn Phe Asn Gly Leu Thr Gly Thr Gly Val Leu Thr Pro Ser Ser
530 535 540
Lys Arg Phe Gln Pro Phe Gln Gln Phe Gly Arg Asp Val Ser Asp Phe
545 550 555
Thr Asp Ser Val Arg Asp Pro Lys Thr Ser Glu Ile Leu Asp Ile Ser
565 570 575
Pro Cys Ala Phe Gly Gly Val Ser Val Ile Thr Pro Gly Thr Asn Ala
580 585 590
Ser Ser Glu Val Ala Val Leu Tyr Gln Asp Val Asn Cys Thr Asp Val
595 600 605
Ser Thr Ala Ile His Ala Asp Gln Leu Thr Pro Ala Trp Arg Ile Tyr
610 615 620
Ser Thr Gly Asn Asn Val Phe Gln Thr Gln Ala Gly Cys Leu Ile Gly
625 630 635
Ala Glu His Val Asp Thr Ser Tyr Glu Cys Asp Ile Pro Ile Gly Ala
645 650 655
Gly Ile Cys Ala Ser Tyr His Thr Val Ser Leu Leu Arg Ser Thr Ser
660 665 670
Gln Lys Ser Ile Val Ala Tyr Thr Met Ser Leu Gly Ala Asp Ser Ser
675 680 685
Ile Ala Tyr Ser Asn Asn Thr Ile Ala Ile Pro Thr Asn Phe Ser Ile

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SEQLIST-20480.TXT

690		695		700
Ser 705	Ile Thr Thr Glu Val 710	Met Pro Val Ser 715	Met Ala Lys Thr Ser 720	
Asp 725	Cys Asn Met Tyr 730	Ile Cys Gly Asp Ser 735	Thr Glu Cys Ala Asn Leu 740	
Leu 745	Leu Gln Tyr 750	Gly Ser Phe Cys Thr 755	Gln Leu Asn Arg Ala Leu Ser 760	
Gly 765	Ile Ala Glu Gln Asp 770	Arg Asn Thr Arg Glu Val 775	Phe Ala Gln	
Val 780	Lys Gln Met Tyr Lys Thr 785	Pro Thr Leu Lys Tyr 790	Phe Gly Gly Phe	
Asn 795	Phe Ser Gln Ile Leu 800	Pro Asp Pro Leu Lys 805	Pro Thr Lys Arg Ser 810	
Phe 815	Ile Glu Asp Leu 820	Leu Phe Asn Lys Val 825	Thr Leu Ala Asp Ala Gly 830	
Phe 835	Met Lys Gln Tyr Gly Glu Cys 840	Leu Gly Asp Ile Asn Ala Arg Asp 845		
Leu 850	Ile Cys Ala Gln Lys Phe 855	Asn Gly Leu Thr Val Leu Pro Pro Leu 860		
Leu 865	Thr Asp Asp Met Ile Ala 870	Ala Tyr Thr Ala Ala Leu Val Ser Gly 875		
Thr 880	Ala Thr Ala Gly Trp Thr Phe Gly Ala Gly Ala Ala Leu Gln Ile 885			
Pro 890	Phe Ala Met Gln Met Ala Tyr Arg Phe 895	Asn Gly Ile Gly Val Thr 900		
Gln 905	Asn Val Leu Tyr Glu Asn Gln Lys 910	Gln Ile Ala Asn Gln Phe Asn 915		
Lys 920	Ala Ile Ser Gln Ile Gln Glu Ser Leu Thr Thr Thr Ser Thr Ala 925			
Leu 930	Gly Lys Leu Gln Asp Val 935	Val Asn Gln Asn Ala Gln Ala Leu Asn 940		
Thr 945	Leu Val Lys Gln Leu Ser Ser Asn Phe Gly Ala Ile Ser Ser Val 950			
Leu 955	Asn Asp Ile Leu Ser Arg Leu Asp Lys 960	Val Glu Ala Glu Val Gln 965		
Ile 970	Asp Arg Leu Ile Thr Gly Arg Leu Gln Ser Leu Gln Thr Tyr Val 975			
Thr 980	Gln Gln Leu Ile Arg Ala Ala Glu Ile Arg Ala Ser Ala Asn Leu 985			
Ala 990	Ala Thr Lys Met Ser Glu Cys Val Leu Gly Gln Ser Lys Arg Val 995			
Asp 1000	Phe Cys Gly Lys Gly Tyr His Leu Met Ser Phe Pro Gln Ala Ala 1005			

SEQLIST-20480.TXT

1025                      1030                      1035                      1040

Pro His Gly Val Val Phe Leu His Val Thr Tyr Val Pro Ser Gln Glu  
                                 1045                      1050                      1055

Arg Asn Phe Thr Thr Ala Pro Ala Ile Cys His Glu Gly Lys Ala Tyr  
                                 1060                      1065                      1070

Phe Pro Arg Glu Gly Val Phe Val Phe Asn Gly Thr Ser Trp Phe Ile  
                                 1075                      1080                      1085

Thr Gln Arg Asn Phe Phe Ser Pro Gln Ile Ile Thr Thr Asp Asn Thr  
                                 1090                      1095                      1100

Phe Val Ser Gly Asn Cys Asp Val Val Ile Gly Ile Ile Asn Asn Thr  
1105                      1110                      1115                      1120

Val Tyr Asp Pro Leu Gln Pro Glu Leu Asp Ser Phe Lys Glu Glu Leu  
                                 1125                      1130                      1135

Asp Lys Tyr Phe Lys Asn His Thr Ser Pro Asp Val Asp Leu Gly Asp  
                                 1140                      1145                      1150

Ile Ser Gly Ile Asn Ala Ser Val Val Asn Ile Gln Lys Glu Ile Asp  
                                 1155                      1160                      1165

Arg Leu Asn Glu Val Ala Lys Asn Leu Asn Glu Ser Leu Ile Asp Leu  
1170                      1175                      1180

Gln Glu Leu Gly Lys Tyr Glu Gln Tyr Ile Lys Trp Pro Trp Tyr Val  
1185                      1190                      1195                      1200

Trp Leu Gly Phe Ile Ala Gly Leu Ile Ala Ile Val Met Val Thr Ile  
                                 1205                      1210                      1215

Leu Leu Cys Cys Met Thr Ser Cys Cys Ser Cys Leu Lys Gly Ala Cys  
                                 1220                      1225                      1230

Ser Cys Gly Ser Cys Cys Lys Phe Asp Glu Asp Asp Ser Glu Pro Val  
1235                      1240                      1245

Leu Lys Gly Val Lys Leu His Tyr Thr  
1250                      1255

<210>    7118  
<211>    7  
<212>    PRT  
<213>    SARS coronavirus

<400>    7118  
Thr Asn Leu Trp Ile Cys Leu  
1                      5

<210>    7119  
<211>    12  
<212>    PRT  
<213>    SARS coronavirus

<400>    7119  
Asp Phe Leu Leu Leu Asp Gln Leu Leu His Ser Gln  
1                      5                      10

<210>    7120

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<211> 43  
<212> PRT  
<213> SARS coronavirus

<400> 7120  
Lys Leu Thr Met Leu Leu Leu Gln Val Leu Phe Met Leu Gln Gln Arg  
1 5 10 15  
Tyr Arg Tyr Lys Pro His Ser Leu Ser Asp Gly Leu Leu Leu Ala Leu  
20 25 30  
His Phe Leu Leu Phe Phe Arg Ala Leu Pro Lys  
35 40

<210> 7121  
<211> 8  
<212> PRT  
<213> SARS coronavirus

<400> 7121  
Leu Arg Ser Ile Lys Asp Gly Ser  
1 5

<210> 7122  
<211> 39  
<212> PRT  
<213> SARS coronavirus

<400> 7122  
Pro Phe Ile Arg Ala Ser Ser Ser Phe Ala Ile Tyr Cys Cys Tyr Leu  
1 5 10 15  
Leu Pro Ser Ile His Ile Phe Cys Leu Ser Leu Gln Val Trp Arg Arg  
20 25 30  
Asn Phe Cys Thr Ser Met Pro  
35

<210> 7123  
<211> 13  
<212> PRT  
<213> SARS coronavirus

<400> 7123  
Tyr Ile Phe Tyr Asn Ala Ser Thr His Val Glu Leu Leu  
1 5 10

<210> 7124  
<211> 169  
<212> PRT  
<213> SARS coronavirus

<400> 7124  
Asp Val Gly Phe Val Gly Ser Ala Asn Pro Arg Thr His Tyr Phe Met  
1 5 10 15  
Met Pro Thr Thr Leu Phe Ala Gly Thr His Ile Thr Met Thr Thr Val  
20 25 30  
Tyr His Ile Thr Val Ser Gln Ile Gln Leu Ser Leu Leu Lys Val Thr  
35 40 45  
Ala Phe Gln His Gln Asn Ser Lys Lys Thr Thr Lys Leu Val Val Ile

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50

55

60

Leu Arg Ile Gly Thr Gln Val Leu Lys Thr Met Ser Leu Tyr Met Ala  
65 70 75 80  
Ile Ser Pro Lys Phe Thr Thr Ser Leu Ser Leu His Lys Leu Leu Gln  
85 90 95  
Thr Leu Val Leu Lys Met Leu His Ser Ser Ser Leu Thr Ser Leu Leu  
100 105 110  
Lys Thr His Arg Met Cys Lys Tyr Thr Gln Ser Thr Ala Leu Gln Glu  
115 120 125  
Leu Leu Ile Gln Gln Trp Ile Gln Phe Met Met Ser Arg Arg Arg Leu  
130 135 140  
Leu Ala Cys Leu Cys Lys His Lys Lys Val Ser Thr Asn Leu Cys Thr  
145 150 155 160  
His Ser Phe Arg Lys Lys Gln Val Arg  
165

<210> 7125  
<211> 14  
<212> PRT  
<213> SARS coronavirus

<400> 7125  
Leu Ile Ala Tyr Phe Phe Phe Leu Leu Ser Trp Tyr Ser Cys  
1 5 10

<210> 7126  
<211> 17  
<212> PRT  
<213> SARS coronavirus

<400> 7126  
Pro Ser Leu Leu Arg Phe Asp Cys Val Arg Thr Ala Ala Ile Leu Leu  
1 5 10 15

Thr

<210> 7127  
<211> 12  
<212> PRT  
<213> SARS coronavirus

<400> 7127  
Asn Gln Arg Phe Thr Ser Thr Arg Val Leu Lys Ile  
1 5 10

<210> 7128  
<211> 37  
<212> PRT  
<213> SARS coronavirus

<400> 7128  
Thr Leu Leu Lys Glu Phe Leu Ile Phe Trp Ser Lys Arg Thr Asn Tyr  
1 5 10 15

Tyr Tyr Tyr Ser Val Trp Asn Phe Asn Ile Ala Tyr His Gly Arg Gln

20 25 30

Arg Tyr Tyr Tyr Arg  
35

<210> 7129  
<211> 26  
<212> PRT  
<213> SARS coronavirus

<400> 7129  
Thr Thr Pro Gly Thr Met Glu Pro Ser Asn Arg Phe Pro Ile Pro Ser  
1 5 10 15

Leu Asp Tyr Val Thr Thr Ile Cys Leu Phe  
20 25

<210> 7130  
<211> 32  
<212> PRT  
<213> SARS coronavirus

<400> 7130  
Ser Glu Gln Val Phe Val His Asn Lys Ala Cys Phe Pro Leu Ala Leu  
1 5 10 15

Val Ala Ser Asn Thr Cys Leu Phe Cys Ala Cys Cys Cys Leu Gln Asn  
20 25 30

<210> 7131  
<211> 19  
<212> PRT  
<213> SARS coronavirus

<400> 7131  
Leu Gly Asp Trp Arg Asp Cys Asp Cys Asn Gly Leu Tyr Cys Arg Leu  
1 5 10 15

Asp Val Ala

<210> 7132  
<211> 42  
<212> PRT  
<213> SARS coronavirus

<400> 7132  
Leu Leu Arg Cys Phe Leu Gln Ala Val Cys Ser Tyr Pro Leu Asn Val  
1 5 10 15

Val Ile Gln Pro Arg Asn Lys His Ser Ser Gln Cys Ala Ser Pro Gly  
20 25 30

Asp Asn Cys Asp Gln Thr Ala His Gly Lys  
35 40

<210> 7133  
<211> 22  
<212> PRT  
<213> SARS coronavirus

<400> 7133

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Thr Cys His Trp Cys Cys Asp His Ser Trp Ser Leu Ala Asn Gly Arg  
1 5 10 15

Thr Leu Pro Arg Ala Leu  
20

<210> 7134  
<211> 27  
<212> PRT  
<213> SARS coronavirus

<400> 7134  
Gly Pro Ala Lys Arg Asp His Cys Gly Tyr Ile Thr Asn Ala Phe Leu  
1 5 10 15

Leu Gln Ile Arg Ser Val Ala Ala Cys Arg His  
20 25

<210> 7135  
<211> 14  
<212> PRT  
<213> SARS coronavirus

<400> 7135  
Phe Arg Phe Cys Cys Ile Gln Pro Leu Pro Tyr Trp Lys Leu  
1 5 10

<210> 7136  
<211> 7  
<212> PRT  
<213> SARS coronavirus

<400> 7136  
Ile Lys Tyr Arg Pro Arg Arg  
1 5

<210> 7137  
<211> 24  
<212> PRT  
<213> SARS coronavirus

<400> 7137  
Gln Arg Gln Tyr Cys Phe Ala Ser Thr Val Ser Asp Asn Arg Cys Phe  
1 5 10 15

Ile Leu Leu Thr Ser Arg Leu Gln  
20

<210> 7138  
<211> 12  
<212> PRT  
<213> SARS coronavirus

<400> 7138  
Gly Leu Ser Gly Leu Leu Phe Gly Ile Leu Thr Leu  
1 5 10

<210> 7139  
<211> 6  
<212> PRT  
<213> SARS coronavirus

<400> 7139



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Asp Asn Tyr Leu Ser Leu  
1 5

<210> 7140  
<211> 7  
<212> PRT  
<213> SARS coronavirus

<400> 7140  
Leu Arg Arg Ile Ile Arg Ser  
1 5

<210> 7141  
<211> 7  
<212> PRT  
<213> SARS coronavirus

<400> 7141  
Met Met Lys Asn Leu Trp Ser  
1 5

<210> 7142  
<211> 128  
<212> PRT  
<213> SARS coronavirus

<400> 7142  
Ile Ile His Lys Thr Asn Met Lys Ile Ile Leu Phe Leu Thr Leu Ile  
1 5 10 15  
Val Phe Thr Ser Cys Glu Leu Tyr His Tyr Gln Glu Cys Val Arg Gly  
20 25 30  
Thr Thr Val Leu Leu Lys Glu Pro Cys Pro Ser Gly Thr Tyr Glu Gly  
35 40 45  
Asn Ser Pro Phe His Pro Leu Ala Asp Asn Lys Phe Ala Leu Thr Cys  
50 55 60  
Thr Ser Thr His Phe Ala Phe Ala Cys Ala Asp Gly Thr Arg His Thr  
65 70 75 80  
Tyr Gln Leu Arg Ala Arg Ser Val Ser Pro Lys Leu Phe Ile Arg Gln  
85 90 95  
Glu Glu Val Gln Gln Glu Leu Tyr Ser Pro Leu Phe Leu Ile Val Ala  
100 105 110  
Ala Leu Val Phe Leu Ile Leu Cys Phe Thr Ile Lys Arg Lys Thr Glu  
115 120 125

<210> 7143  
<211> 4  
<212> PRT  
<213> SARS coronavirus

<400> 7143  
Met Ser Ser Leu  
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<210> 7144  
<211> 7

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<212> PRT  
<213> SARS coronavirus

<400> 7144  
Leu Thr Ser Ile Cys Ala Phe  
1 5

<210> 7145  
<211> 7  
<212> PRT  
<213> SARS coronavirus

<400> 7145  
Pro Phe Cys Tyr Ser Leu Phe  
1 5

<210> 7146  
<211> 13  
<212> PRT  
<213> SARS coronavirus

<400> 7146  
Cys Leu Leu Tyr Phe Gly Phe His Ser Lys Ser Arg Ile  
1 5 10

<210> 7147  
<211> 10  
<212> PRT  
<213> SARS coronavirus

<400> 7147  
Lys Asn Leu Val Pro Lys Ser Lys Arg Thr  
1 5 10

<210> 7148  
<211> 5  
<212> PRT  
<213> SARS coronavirus

<400> 7148  
Asn Phe Ser Leu Phe  
1 5

<210> 7149  
<211> 11  
<212> PRT  
<213> SARS coronavirus

<400> 7149  
Leu Val Phe Leu Tyr Ala Val Ala Tyr Ala Leu  
1 5 10

<210> 7150  
<211> 93  
<212> PRT  
<213> SARS coronavirus

<400> 7150  
Tyr Ser Ala Val His Leu Ile Asn Leu Met Cys Leu Lys Ile Leu Val  
1 5 10 15

Arg Tyr Asn Thr Arg Gly Asn Thr Tyr Ser Thr Ala Trp Leu Cys Ala  
20 25 30

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Leu Gly Lys Val Leu Pro Phe His Arg Trp His Thr Met Val Gln Thr  
35 40 45  
Cys Thr Pro Asn Val Thr Ile Asn Cys Gln Asp Pro Ala Gly Gly Ala  
50 55 60  
Leu Ile Ala Arg Cys Trp Tyr Leu His Glu Gly His Gln Thr Ala Ala  
65 70 75 80  
Phe Arg Asp Val Leu Val Val Leu Asn Lys Arg Thr Asn  
85 90

<210> 7151  
<211> 7  
<212> PRT  
<213> SARS coronavirus

<400> 7151  
Trp Thr Pro Ile Lys Pro Thr  
1 5

<210> 7152  
<211> 13  
<212> PRT  
<213> SARS coronavirus

<400> 7152  
Cys Pro Pro His Tyr Ile Trp Trp Thr His Arg Phe Asn  
1 5 10

<210> 7153  
<211> 20  
<212> PRT  
<213> SARS coronavirus

<400> 7153  
Pro Glu Trp Arg Thr Gln Trp Gly Lys Ala Lys Thr Ala Pro Thr Pro  
1 5 10 15

Arg Phe Thr Gln  
20

<210> 7154  
<211> 16  
<212> PRT  
<213> SARS coronavirus

<400> 7154  
Tyr Cys Val Leu Val His Ser Ser His Ser Ala Trp Gln Gly Gly Thr  
1 5 10 15

<210> 7155  
<211> 12  
<212> PRT  
<213> SARS coronavirus

<400> 7155  
Ile Pro Ser Arg Pro Gly Arg Ser Asn Gln His Gln  
1 5 10

<210> 7156

SEQLIST-20480.TXT

<211> 15  
 <212> PRT  
 <213> SARS coronavirus

<400> 7156  
 Pro Asn Trp Leu Leu Pro Lys Ser Tyr Pro Thr Ser Ser Trp Trp  
 1 5 10 15

<210> 7157  
 <211> 27  
 <212> PRT  
 <213> SARS coronavirus

<400> 7157  
 Arg Gln Asn Glu Arg Ala Gln Pro Gln Met Val Leu Leu Leu Pro Arg  
 1 5 10 15

Asn Trp Pro Arg Ser Phe Thr Ser Leu Arg Arg  
 20 25

<210> 7158  
 <211> 9  
 <212> PRT  
 <213> SARS coronavirus

<400> 7158  
 Gln Arg Arg His Arg Met Gly Cys Asn  
 1 5

<210> 7159  
 <211> 15  
 <212> PRT  
 <213> SARS coronavirus

<400> 7159  
 Gly Ser Leu Glu Tyr Thr Gln Arg Pro His Trp His Pro Gln Ser  
 1 5 10 15

<210> 7160  
 <211> 36  
 <212> PRT  
 <213> SARS coronavirus

<400> 7160  
 Gln Cys Cys His Arg Ala Thr Thr Ser Ser Arg Asn Asn Ile Ala Lys  
 1 5 10 15

Arg Leu Leu Arg Arg Gly Lys Gln Arg Arg Gln Ser Ser Leu Phe Ser  
 20 25 30

Leu Leu Ile Thr  
 35

<210> 7161  
 <211> 9  
 <212> PRT  
 <213> SARS coronavirus

<400> 7161  
 Phe Lys Lys Phe Asn Ser Trp Gln Gln  
 1 5

<210> 7162

SEQLIST-20480.TXT

<211> 8  
 <212> PRT  
 <213> SARS coronavirus

<400> 7162  
 Gly Lys Phe Ser Cys Ser Asn Gly  
 1 5

<210> 7163  
 <211> 14  
 <212> PRT  
 <213> SARS coronavirus

<400> 7163  
 Asn Cys Pro Arg Ala Ile Ala Ala Arg Gln Ile Glu Pro Ala  
 1 5 10

<210> 7164  
 <211> 5  
 <212> PRT  
 <213> SARS coronavirus

<400> 7164  
 Glu Gln Ser Phe Trp  
 1 5

<210> 7165  
 <211> 10  
 <212> PRT  
 <213> SARS coronavirus

<400> 7165  
 Arg Pro Thr Thr Thr Arg Pro Asn Cys His  
 1 5 10

<210> 7166  
 <211> 4  
 <212> PRT  
 <213> SARS coronavirus

<400> 7166  
 Glu Ile Cys Cys  
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<210> 7167  
 <211> 40  
 <212> PRT  
 <213> SARS coronavirus

<400> 7167  
 Lys Ala Ser Pro Lys Thr Tyr Cys His Lys Thr Val Gln Arg His Ser  
 1 5 10 15

Ser Ile Trp Glu Thr Trp Ser Arg Thr Asn Pro Arg Lys Phe Arg Gly  
 20 25 30

Pro Arg Pro Asn Gln Thr Arg Asn  
 35 40

<210> 7168  
 <211> 40  
 <212> PRT  
 <213> SARS coronavirus

SEQLIST-20480.TXT

<400> 7168  
Leu Gln Thr Leu Ala Ala Asn Cys Thr Ile Cys Ser Lys Cys Leu Cys  
1 5 10 15

Ile Leu Trp Asn Val Thr His Trp His Gly Ser His Thr Phe Gly Asn  
20 25 30

Met Ala Asp Leu Ser Trp Ser His  
35 40

<210> 7169  
<211> 16  
<212> PRT  
<213> SARS coronavirus

<400> 7169  
Gln Arg Ser Thr Ile Gln Arg Gln Arg His Thr Ala Glu Gln Ala His  
1 5 10 15

<210> 7170  
<211> 10  
<212> PRT  
<213> SARS coronavirus

<400> 7170  
Arg Ile Gln Asn Ile Pro Thr Asn Arg Ala  
1 5 10

<210> 7171  
<211> 7  
<212> PRT  
<213> SARS coronavirus

<400> 7171  
Lys Gly Gln Lys Glu Lys Asp  
1 5

<210> 7172  
<211> 20  
<212> PRT  
<213> SARS coronavirus

<400> 7172  
Ser Ser Ala Phe Ala Ala Glu Thr Lys Glu Ala Ala His Cys Asp Ser  
1 5 10 15

Ser Ser Cys Gly  
20

<210> 7173  
<211> 14  
<212> PRT  
<213> SARS coronavirus

<400> 7173  
Phe Leu Gln Thr Thr Ser Lys Phe His Glu Trp Ser Phe Cys  
1 5 10

<210> 7174  
<211> 39  
<212> PRT

<213> SARS coronavirus

<400> 7174

Phe Asn Ser Gly Ile Asn Thr His Asp Asp His Thr Arg Gln Met Gly  
1 5 10 15

Tyr Val Asn Val Phe Ala Ile Pro Phe Thr Ile His Ser Leu Leu Leu  
20 25 30

Cys Arg Met Asn Ser Arg Asn  
35

<210> 7175

<211> 12

<212> PRT

<213> SARS coronavirus

<400> 7175

Thr Ala Gln Val Gly Leu Val Asn Phe Asn Leu Thr  
1 5 10

<210> 7176

<211> 6

<212> PRT

<213> SARS coronavirus

<400> 7176

Gln Ser Leu Ile Asn Val  
1 5

<210> 7177

<211> 21

<212> PRT

<213> SARS coronavirus

<400> 7177

Gly Gly Leu Glu Arg Ala Thr Thr Phe Ser Ser Arg Pro Arg Gly Val  
1 5 10 15

Arg Ser Arg Val Gln  
20

<210> 7178

<211> 12

<212> PRT

<213> SARS coronavirus

<400> 7178

Ile Met Leu Gly Arg Ala Ala Tyr Met Glu Glu Pro  
1 5 10

<210> 7179

<211> 18

<212> PRT

<213> SARS coronavirus

<400> 7179

Cys Val Lys Leu Ile Leu Val Val Leu Ser Pro Cys Asp Phe Asn Ser  
1 5 10 15

Phe Leu

<210> 7180  
 <211> 4  
 <212> PRT  
 <213> SARS coronavirus

<400> 7180  
 Asn Gly Thr Cys  
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<210> 7181  
 <211> 4  
 <212> PRT  
 <213> SARS coronavirus

<400> 7181  
 Asn His Ser Asn  
 1

<210> 7182  
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 <213> SARS coronavirus

<400> 7182  
 Asn Phe Ser Ser  
 1

<210> 7183  
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 <213> SARS coronavirus

<400> 7183  
 Asn His Thr Lys  
 1

<210> 7184  
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 <213> SARS coronavirus

<400> 7184  
 Asn Lys Thr Val  
 1

<210> 7185  
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 <212> PRT  
 <213> SARS coronavirus

<400> 7185  
 Asn Ser Ser Asn  
 1

<210> 7186  
 <211> 4  
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 <213> SARS coronavirus

<400> 7186  
 Asn Val Ser Leu  
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<210> 7187  
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 <212> PRT  
 <213> SARS coronavirus

<400> 7187  
 Asn Ala Thr Glu  
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<210> 7188  
 <211> 2712  
 <212> PRT  
 <213> SARS coronavirus

<400> 7188  
 Pro Thr Pro Arg Thr Leu Asp Ala Val Cys Gly Cys Ile Asn Val Phe  
 1 5 10 15  
 Lys Arg Val Cys Gly Val Ser Ala Ala Arg Leu Thr Pro Cys Gly Thr  
 20 25 30  
 Gly Thr Ser Thr Asp Val Val Tyr Arg Ala Phe Asp Ile Tyr Asn Glu  
 35 40 45  
 Lys Val Ala Gly Phe Ala Lys Phe Leu Lys Thr Asn Cys Cys Arg Phe  
 50 55 60  
 Gln Glu Lys Asp Glu Glu Gly Asn Leu Leu Asp Ser Tyr Phe Val Val  
 65 70 75 80  
 Lys Arg His Thr Met Ser Asn Tyr Gln His Glu Glu Thr Ile Tyr Asn  
 85 90 95  
 Leu Val Lys Asp Cys Pro Ala Val Ala Val His Asp Phe Phe Lys Phe  
 100 105 110  
 Arg Val Asp Gly Asp Met Val Pro His Ile Ser Arg Gln Arg Leu Thr  
 115 120 125  
 Lys Tyr Thr Met Ala Asp Leu Val Tyr Ala Leu Arg His Phe Asp Glu  
 130 135 140  
 Gly Asn Cys Asp Thr Leu Lys Glu Ile Leu Val Thr Tyr Asn Cys Cys  
 145 150 155 160  
 Asp Asp Asp Tyr Phe Asn Lys Lys Asp Trp Tyr Asp Phe Val Glu Asn  
 165 170 175  
 Pro Asp Ile Leu Arg Val Tyr Ala Asn Leu Gly Glu Arg Val Arg Gln  
 180 185 190  
 Ser Leu Leu Lys Thr Val Gln Phe Cys Asp Ala Met Arg Asp Ala Gly  
 195 200 205  
 Ile Val Gly Val Leu Thr Leu Asp Asn Gln Asp Leu Asn Gly Asn Trp  
 210 215 220  
 Tyr Asp Phe Gly Asp Phe Val Gln Val Ala Pro Gly Cys Gly Val Pro  
 225 230 235 240  
 Ile Val Asp Ser Tyr Tyr Ser Leu Leu Met Pro Ile Leu Thr Leu Thr  
 245 250 255

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Arg Ala Leu Ala Ala Glu Ser His Met Asp Ala Asp Leu Ala Lys Pro  
260 265 270

Leu Ile Lys Trp Asp Leu Leu Lys Tyr Asp Phe Thr Glu Glu Arg Leu  
275 280 285

Cys Leu Phe Asp Arg Tyr Phe Lys Tyr Trp Asp Gln Thr Tyr His Pro  
290 295 300

Asn Cys Ile Asn Cys Leu Asp Asp Arg Cys Ile Leu His Cys Ala Asn  
305 310 315 320

Phe Asn Val Leu Phe Ser Thr Val Phe Pro Pro Thr Ser Phe Gly Pro  
325 330 335

Leu Val Arg Lys Ile Phe Val Asp Gly Val Pro Phe Val Val Ser Thr  
340 345 350

Gly Tyr His Phe Arg Glu Leu Gly Val Val His Asn Gln Asp Val Asn  
355 360 365

Leu His Ser Ser Arg Leu Ser Phe Lys Glu Leu Leu Val Tyr Ala Ala  
370 375 380

Asp Pro Ala Met His Ala Ala Ser Gly Asn Leu Leu Leu Asp Lys Arg  
385 390 395 400

Thr Thr Cys Phe Ser Val Ala Ala Leu Thr Asn Asn Val Ala Phe Gln  
405 410 415

Thr Val Lys Pro Gly Asn Phe Asn Lys Asp Phe Tyr Asp Phe Ala Val  
420 425 430

Ser Lys Gly Phe Phe Lys Glu Gly Ser Ser Val Glu Leu Lys His Phe  
435 440 445

Phe Phe Ala Gln Asp Gly Asn Ala Ala Ile Ser Asp Tyr Asp Tyr Tyr  
450 455 460

Arg Tyr Asn Leu Pro Thr Met Cys Asp Ile Arg Gln Leu Leu Phe Val  
465 470 475 480

Val Glu Val Val Asp Lys Tyr Phe Asp Cys Tyr Asp Gly Gly Cys Ile  
485 490 495

Asn Ala Asn Gln Val Ile Val Asn Asn Leu Asp Lys Ser Ala Gly Phe  
500 505 510

Pro Phe Asn Lys Trp Gly Lys Ala Arg Leu Tyr Tyr Asp Ser Met Ser  
515 520 525

Tyr Glu Asp Gln Asp Ala Leu Phe Ala Tyr Thr Lys Arg Asn Val Ile  
530 535 540

Pro Thr Ile Thr Gln Met Asn Leu Lys Tyr Ala Ile Ser Ala Lys Asn  
545 550 555 560

Arg Ala Arg Thr Val Ala Gly Val Ser Ile Cys Ser Thr Met Thr Asn  
565 570 575

Arg Gln Phe His Gln Lys Leu Leu Lys Ser Ile Ala Ala Thr Arg Gly  
580 585 590

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Ala Thr Val Val Ile Gly Thr Ser Lys Phe Tyr Gly Gly Trp His Asn  
595 600 605

Met Leu Lys Thr Val Tyr Ser Asp Val Glu Thr Pro His Leu Met Gly  
610 615 620

Trp Asp Tyr Pro Lys Cys Asp Arg Ala Met Pro Asn Met Leu Arg Ile  
625 630 635 640

Met Ala Ser Leu Val Leu Ala Arg Lys His Asn Thr Cys Cys Asn Leu  
645 650 655

Ser His Arg Phe Tyr Arg Leu Ala Asn Glu Cys Ala Gln Val Leu Ser  
660 665 670

Glu Met Val Met Cys Gly Gly Ser Leu Tyr Val Lys Pro Gly Gly Thr  
675 680 685

Ser Ser Gly Asp Ala Thr Thr Ala Tyr Ala Asn Ser Val Phe Asn Ile  
690 695 700

Cys Gln Ala Val Thr Ala Asn Val Asn Ala Leu Leu Ser Thr Asp Gly  
705 710 715 720

Asn Lys Ile Ala Asp Lys Tyr Val Arg Asn Leu Gln His Arg Leu Tyr  
725 730 735

Glu Cys Leu Tyr Arg Asn Arg Asp Val Asp His Glu Phe Val Asp Glu  
740 745 750

Phe Tyr Ala Tyr Leu Arg Lys His Phe Ser Met Met Ile Leu Ser Asp  
755 760 765

Asp Ala Val Val Cys Tyr Asn Ser Asn Tyr Ala Ala Gln Gly Leu Val  
770 775 780

Ala Ser Ile Lys Asn Phe Lys Ala Val Leu Tyr Tyr Gln Asn Asn Val  
785 790 795 800

Phe Met Ser Glu Ala Lys Cys Trp Thr Glu Thr Asp Leu Thr Lys Gly  
805 810 815

Pro His Glu Phe Cys Ser Gln His Thr Met Leu Val Lys Gln Gly Asp  
820 825 830

Asp Tyr Val Tyr Leu Pro Tyr Pro Asp Pro Ser Arg Ile Leu Gly Ala  
835 840 845

Gly Cys Phe Val Asp Asp Ile Val Lys Thr Asp Gly Thr Leu Met Ile  
850 855 860

Glu Arg Phe Val Ser Leu Ala Ile Asp Ala Tyr Pro Leu Thr Lys His  
865 870 875 880

Pro Asn Gln Glu Tyr Ala Asp Val Phe His Leu Tyr Leu Gln Tyr Ile  
885 890 895

Arg Lys Leu His Asp Glu Leu Thr Gly His Met Leu Asp Met Tyr Ser  
900 905 910

Val Met Leu Thr Asn Asp Asn Thr Ser Arg Tyr Trp Glu Pro Glu Phe  
915 920 925

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Tyr Glu Ala Met Tyr Thr Pro His Thr Val Leu Gln Ala Val Gly Ala  
 930 935 940  
 Cys Val Leu Cys Asn Ser Gln Thr Ser Leu Arg Cys Gly Ala Cys Ile  
 945 950 955 960  
 Arg Arg Pro Phe Leu Cys Cys Lys Cys Cys Tyr Asp His Val Ile Ser  
 965 970 975  
 Thr Ser His Lys Leu Val Leu Ser Val Asn Pro Tyr Val Cys Asn Ala  
 980 985 990  
 Pro Gly Cys Asp Val Thr Asp Val Thr Gln Leu Tyr Leu Gly Gly Met  
 995 1000 1005  
 Ser Tyr Tyr Cys Lys Ser His Lys Pro Pro Ile Ser Phe Pro Leu Cys  
 1010 1015 1020  
 Ala Asn Gly Gln Val Phe Gly Leu Tyr Lys Asn Thr Cys Val Gly Ser  
 1025 1030 1035 1040  
 Asp Asn Val Thr Asp Phe Asn Ala Ile Ala Thr Cys Asp Trp Thr Asn  
 1045 1050 1055  
 Ala Gly Asp Tyr Ile Leu Ala Asn Thr Cys Thr Glu Arg Leu Lys Leu  
 1060 1065 1070  
 Phe Ala Ala Glu Thr Leu Lys Ala Thr Glu Glu Thr Phe Lys Leu Ser  
 1075 1080 1085  
 Tyr Gly Ile Ala Thr Val Arg Glu Val Leu Ser Asp Arg Glu Leu His  
 1090 1095 1100  
 Leu Ser Trp Glu Val Gly Lys Pro Arg Pro Pro Leu Asn Arg Asn Tyr  
 1105 1110 1115 1120  
 Val Phe Thr Gly Tyr Arg Val Thr Lys Asn Ser Lys Val Gln Ile Gly  
 1125 1130 1135  
 Glu Tyr Thr Phe Glu Lys Gly Asp Tyr Gly Asp Ala Val Val Tyr Arg  
 1140 1145 1150  
 Gly Thr Thr Thr Tyr Lys Leu Asn Val Gly Asp Tyr Phe Val Leu Thr  
 1155 1160 1165  
 Ser His Thr Val Met Pro Leu Ser Ala Pro Thr Leu Val Pro Gln Glu  
 1170 1175 1180  
 His Tyr Val Arg Ile Thr Gly Leu Tyr Pro Thr Leu Asn Ile Ser Asp  
 1185 1190 1195 1200  
 Glu Phe Ser Ser Asn Val Ala Asn Tyr Gln Lys Val Gly Met Gln Lys  
 1205 1210 1215  
 Tyr Ser Thr Leu Gln Gly Pro Pro Gly Thr Gly Lys Ser His Phe Ala  
 1220 1225 1230  
 Ile Gly Leu Ala Leu Tyr Tyr Pro Ser Ala Arg Ile Val Tyr Thr Ala  
 1235 1240 1245  
 Cys Ser His Ala Ala Val Asp Ala Leu Cys Glu Lys Ala Leu Lys Tyr  
 1250 1255 1260

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Leu Pro Ile Asp Lys Cys Ser Arg Ile Ile Pro Ala Arg Ala Arg Val  
 1265 1270 1275 1280  
 Glu Cys Phe Asp Lys Phe Lys Val Asn Ser Thr Leu Glu Gln Tyr Val  
 1285 1290 1295  
 Phe Cys Thr Val Asn Ala Leu Pro Glu Thr Thr Ala Asp Ile Val Val  
 1300 1305 1310  
 Phe Asp Glu Ile Ser Met Ala Thr Asn Tyr Asp Leu Ser Val Val Asn  
 1315 1320 1325  
 Ala Arg Leu Arg Ala Lys His Tyr Val Tyr Ile Gly Asp Pro Ala Gln  
 1330 1335 1340  
 Leu Pro Ala Pro Arg Thr Leu Leu Thr Lys Gly Thr Leu Glu Pro Glu  
 1345 1350 1355 1360  
 Tyr Phe Asn Ser Val Cys Arg Leu Met Lys Thr Ile Gly Pro Asp Met  
 1365 1370 1375  
 Phe Leu Gly Thr Cys Arg Arg Cys Pro Ala Glu Ile Val Asp Thr Val  
 1380 1385 1390  
 Ser Ala Leu Val Tyr Asp Asn Lys Leu Lys Ala His Lys Asp Lys Ser  
 1395 1400 1405  
 Ala Gln Cys Phe Lys Met Phe Tyr Lys Gly Val Ile Thr His Asp Val  
 1410 1415 1420  
 Ser Ser Ala Ile Asn Arg Pro Gln Ile Gly Val Val Arg Glu Phe Leu  
 1425 1430 1435 1440  
 Thr Arg Asn Pro Ala Trp Arg Lys Ala Val Phe Ile Ser Pro Tyr Asn  
 1445 1450 1455  
 Ser Gln Asn Ala Val Ala Ser Lys Ile Leu Gly Leu Pro Thr Gln Thr  
 1460 1465 1470  
 Val Asp Ser Ser Gln Gly Ser Glu Tyr Asp Tyr Val Ile Phe Thr Gln  
 1475 1480 1485  
 Thr Thr Glu Thr Ala His Ser Cys Asn Val Asn Arg Phe Asn Val Ala  
 1490 1495 1500  
 Ile Thr Arg Ala Lys Ile Gly Ile Leu Cys Ile Met Ser Asp Arg Asp  
 1505 1510 1515 1520  
 Leu Tyr Asp Lys Leu Gln Phe Thr Ser Leu Glu Ile Pro Arg Arg Asn  
 1525 1530 1535  
 Val Ala Thr Leu Gln Ala Glu Asn Val Thr Gly Leu Phe Lys Asp Cys  
 1540 1545 1550  
 Ser Lys Ile Ile Thr Gly Leu His Pro Thr Gln Ala Pro Thr His Leu  
 1555 1560 1565  
 Ser Val Asp Ile Lys Phe Lys Thr Glu Gly Leu Cys Val Asp Ile Pro  
 1570 1575 1580  
 Gly Ile Pro Lys Asp Met Thr Tyr Arg Arg Leu Ile Ser Met Met Gly  
 1585 1590 1595 1600

SEQLIST-20480.TXT

Phe Lys Met Asn Tyr Gln Val Asn Gly Tyr Pro Asn Met Phe Ile Thr  
1605 1610 1615

Arg Glu Glu Ala Ile Arg His Val Arg Ala Trp Ile Gly Phe Asp Val  
1620 1625 1630

Glu Gly Cys His Ala Thr Arg Asp Ala Val Gly Thr Asn Leu Pro Leu  
1635 1640 1645

Gln Leu Gly Phe Ser Thr Gly Val Asn Leu Val Ala Val Pro Thr Gly  
1650 1655 1660

Tyr Val Asp Thr Glu Asn Asn Thr Glu Phe Thr Arg Val Asn Ala Lys  
1665 1670 1675 1680

Pro Pro Pro Gly Asp Gln Phe Lys His Leu Ile Pro Leu Met Tyr Lys  
1685 1690 1695

Gly Leu Pro Trp Asn Val Val Arg Ile Lys Ile Val Gln Met Leu Ser  
1700 1705 1710

Asp Thr Leu Lys Gly Leu Ser Asp Arg Val Val Phe Val Leu Trp Ala  
1715 1720 1725

His Gly Phe Glu Leu Thr Ser Met Lys Tyr Phe Val Lys Ile Gly Pro  
1730 1735 1740

Glu Arg Thr Cys Cys Leu Cys Asp Lys Arg Ala Thr Cys Phe Ser Thr  
1745 1750 1755 1760

Ser Ser Asp Thr Tyr Ala Cys Trp Asn His Ser Val Gly Phe Asp Tyr  
1765 1770 1775

Val Tyr Asn Pro Phe Met Ile Asp Val Gln Gln Trp Gly Phe Thr Gly  
1780 1785 1790

Asn Leu Gln Ser Asn His Asp Gln His Cys Gln Val His Gly Asn Ala  
1795 1800 1805

His Val Ala Ser Cys Asp Ala Ile Met Thr Arg Cys Leu Ala Val His  
1810 1815 1820

Glu Cys Phe Val Lys Arg Val Asp Trp Ser Val Glu Tyr Pro Ile Ile  
1825 1830 1835 1840

Gly Asp Glu Leu Arg Val Asn Ser Ala Cys Arg Lys Val Gln His Met  
1845 1850 1855

Val Val Lys Ser Ala Leu Leu Ala Asp Lys Phe Pro Val Leu His Asp  
1860 1865 1870

Ile Gly Asn Pro Lys Ala Ile Lys Cys Val Pro Gln Ala Glu Val Glu  
1875 1880 1885

Trp Lys Phe Tyr Asp Ala Gln Pro Cys Ser Asp Lys Ala Tyr Lys Ile  
1890 1895 1900

Glu Glu Leu Phe Tyr Ser Tyr Ala Thr His His Asp Lys Phe Thr Asp  
1905 1910 1915 1920

Gly Val Cys Leu Phe Trp Asn Cys Asn Val Asp Arg Tyr Pro Ala Asn  
1925 1930 1935

SEQLIST-20480.TXT

Ala Ile Val Cys Arg Phe Asp Thr Arg Val Leu Ser Asn Leu Asn Leu  
1940 1945 1950

Pro Gly Cys Asp Gly Gly Ser Leu Tyr Val Asn Lys His Ala Phe His  
1955 1960 1965

Thr Pro Ala Phe Asp Lys Ser Ala Phe Thr Asn Leu Lys Gln Leu Pro  
1970 1975 1980

Phe Phe Tyr Tyr Ser Asp Ser Pro Cys Glu Ser His Gly Lys Gln Val  
1985 1990 1995 2000

Val Ser Asp Ile Asp Tyr Val Pro Leu Lys Ser Ala Thr Cys Ile Thr  
2005 2010 2015

Arg Cys Asn Leu Gly Gly Ala Val Cys Arg His His Ala Asn Glu Tyr  
2020 2025 2030

Arg Gln Tyr Leu Asp Ala Tyr Asn Met Met Ile Ser Ala Gly Phe Ser  
2035 2040 2045

Leu Trp Ile Tyr Lys Gln Phe Asp Thr Tyr Asn Leu Trp Asn Thr Phe  
2050 2055 2060

Thr Arg Leu Gln Ser Leu Glu Asn Val Ala Tyr Asn Val Val Asn Lys  
2065 2070 2075 2080

Gly His Phe Asp Gly His Ala Gly Glu Ala Pro Val Ser Ile Ile Asn  
2085 2090 2095

Asn Ala Val Tyr Thr Lys Val Asp Gly Ile Asp Val Glu Ile Phe Glu  
2100 2105 2110

Asn Lys Thr Thr Leu Pro Val Asn Val Ala Phe Glu Leu Trp Ala Lys  
2115 2120 2125

Arg Asn Ile Lys Pro Val Pro Glu Ile Lys Ile Leu Asn Asn Leu Gly  
2130 2135 2140

Val Asp Ile Ala Ala Asn Thr Val Ile Trp Asp Tyr Lys Arg Glu Ala  
2145 2150 2155 2160

Pro Ala His Val Ser Thr Ile Gly Val Cys Thr Met Thr Asp Ile Ala  
2165 2170 2175

Lys Lys Pro Thr Glu Ser Ala Cys Ser Ser Leu Thr Val Leu Phe Asp  
2180 2185 2190

Gly Arg Val Glu Gly Gln Val Asp Leu Phe Arg Asn Ala Arg Asn Gly  
2195 2200 2205

Val Leu Ile Thr Glu Gly Ser Val Lys Gly Leu Thr Pro Ser Lys Gly  
2210 2215 2220

Pro Ala Gln Ala Ser Val Asn Gly Val Thr Leu Ile Gly Glu Ser Val  
2225 2230 2235 2240

Lys Thr Gln Phe Asn Tyr Phe Lys Lys Val Asp Gly Ile Ile Gln Gln  
2245 2250 2255

Leu Pro Glu Thr Tyr Phe Thr Gln Ser Arg Asp Leu Glu Asp Phe Lys  
2260 2265 2270

SEQLIST-20480.TXT

Pro Arg Ser Gln Met Glu Thr Asp Phe Leu Glu Leu Ala Met Asp Glu  
2275 2280 2285

Phe Ile Gln Arg Tyr Lys Leu Glu Gly Tyr Ala Phe Glu His Ile Val  
2290 2295 2300

Tyr Gly Asp Phe Ser His Gly Gln Leu Gly Gly Leu His Leu Met Ile  
2305 2310 2315 2320

Gly Leu Ala Lys Arg Ser Gln Asp Ser Pro Leu Lys Leu Glu Asp Phe  
2325 2330 2335

Ile Pro Met Asp Ser Thr Val Lys Asn Tyr Phe Ile Thr Asp Ala Gln  
2340 2345 2350

Thr Gly Ser Ser Lys Cys Val Cys Ser Val Ile Asp Leu Leu Leu Asp  
2355 2360 2365

Asp Phe Val Glu Ile Ile Lys Ser Gln Asp Leu Ser Val Ile Ser Lys  
2370 2375 2380

Val Val Lys Val Thr Ile Asp Tyr Ala Glu Ile Ser Phe Met Leu Trp  
2385 2390 2395 2400

Cys Lys Asp Gly His Val Glu Thr Phe Tyr Pro Lys Leu Gln Ala Ser  
2405 2410 2415

Arg Ala Trp Gln Pro Gly Val Ala Met Pro Asn Leu Tyr Lys Met Gln  
2420 2425 2430

Arg Met Leu Leu Glu Lys Cys Asp Leu Gln Asn Tyr Gly Glu Asn Ala  
2435 2440 2445

Val Ile Pro Lys Gly Ile Met Met Asn Val Ala Lys Tyr Thr Gln Leu  
2450 2455 2460

Cys Gln Tyr Leu Asn Thr Leu Thr Leu Ala Val Pro Tyr Asn Met Arg  
2465 2470 2475 2480

Val Ile His Phe Gly Ala Gly Ser Asp Lys Gly Val Ala Pro Gly Thr  
2485 2490 2495

Ala Val Leu Arg Gln Trp Leu Pro Thr Gly Thr Leu Leu Val Asp Ser  
2500 2505 2510

Asp Leu Asn Asp Phe Val Ser Asp Ala Tyr Ser Thr Leu Ile Gly Asp  
2515 2520 2525

Cys Ala Thr Val His Thr Ala Asn Lys Trp Asp Leu Ile Ile Ser Asp  
2530 2535 2540

Met Tyr Asp Pro Arg Thr Lys His Val Thr Lys Glu Asn Asp Ser Lys  
2545 2550 2555 2560

Glu Gly Phe Phe Thr Tyr Leu Cys Gly Phe Ile Lys Gln Lys Leu Ala  
2565 2570 2575

Leu Gly Gly Ser Ile Ala Val Lys Ile Thr Glu His Ser Trp Asn Ala  
2580 2585 2590

Asp Leu Tyr Lys Leu Met Gly His Phe Ser Trp Trp Thr Ala Phe Val  
2595 2600 2605



SEQLIST-20480.TXT

Thr Asn Val Asn Ala Ser Ser Ser Glu Ala Phe Leu Ile Gly Ala Asn  
 2610 2615 2620

Tyr Leu Gly Lys Pro Lys Glu Gln Ile Asp Gly Tyr Thr Met His Ala  
 2625 2630 2635 2640

Asn Tyr Ile Phe Trp Arg Asn Thr Asn Pro Ile Gln Leu Ser Ser Tyr  
 2645 2650 2655

Ser Leu Phe Asp Met Ser Lys Phe Pro Leu Lys Leu Arg Gly Thr Ala  
 2660 2665 2670

Val Met Ser Leu Lys Glu Asn Gln Ile Asn Asp Met Ile Tyr Ser Leu  
 2675 2680 2685

Leu Glu Lys Gly Arg Leu Ile Ile Arg Glu Asn Asn Arg Val Val Val  
 2690 2695 2700

Ser Ser Asp Ile Leu Val Asn Asn  
 2705 2710

<210> 7189  
 <211> 1257  
 <212> PRT  
 <213> SARS coronavirus

<400> 7189  
 Thr Asn Met Phe Ile Phe Leu Leu Phe Leu Thr Leu Thr Ser Gly Ser  
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Asp Leu Asp Arg Cys Thr Thr Phe Asp Asp Val Gln Ala Pro Asn Tyr  
 20 25 30

Thr Gln His Thr Ser Ser Met Arg Gly Val Tyr Tyr Pro Asp Glu Ile  
 35 40 45

Phe Arg Ser Asp Thr Leu Tyr Leu Thr Gln Asp Leu Phe Leu Pro Phe  
 50 55 60

Tyr Ser Asn Val Thr Gly Phe His Thr Ile Asn His Thr Phe Gly Asn  
 65 70 75 80

Pro Val Ile Pro Phe Lys Asp Gly Ile Tyr Phe Ala Ala Thr Glu Lys  
 85 90 95

Ser Asn Val Val Arg Gly Trp Val Phe Gly Ser Thr Met Asn Asn Lys  
 100 105 110

Ser Gln Ser Val Ile Ile Ile Asn Asn Ser Thr Asn Val Val Ile Arg  
 115 120 125

Ala Cys Asn Phe Glu Leu Cys Asp Asn Pro Phe Phe Ala Val Ser Lys  
 130 135 140

Pro Met Gly Thr Gln Thr His Thr Met Ile Phe Asp Asn Ala Phe Asn  
 145 150 155 160

Cys Thr Phe Glu Tyr Ile Ser Asp Ala Phe Ser Leu Asp Val Ser Glu  
 165 170 175

Lys Ser Gly Asn Phe Lys His Leu Arg Glu Phe Val Phe Lys Asn Lys  
 180 185 190

SEQLIST-20480.TXT

Asp Gly Phe Leu Tyr Val Tyr Lys Gly Tyr Gln Pro Ile Asp Val Val  
 195 200 205  
 Arg Asp Leu Pro Ser Gly Phe Asn Thr Leu Lys Pro Ile Phe Lys Leu  
 210 215 220  
 Pro Leu Gly Ile Asn Ile Thr Asn Phe Arg Ala Ile Leu Thr Ala Phe  
 225 230 235 240  
 Ser Pro Ala Gln Asp Ile Trp Gly Thr Ser Ala Ala Ala Tyr Phe Val  
 245 250 255  
 Gly Tyr Leu Lys Pro Thr Thr Phe Met Leu Lys Tyr Asp Glu Asn Gly  
 260 265 270  
 Thr Ile Thr Asp Ala Val Asp Cys Ser Gln Asn Pro Leu Ala Glu Leu  
 275 280 285  
 Lys Cys Ser Val Lys Ser Phe Glu Ile Asp Lys Gly Ile Tyr Gln Thr  
 290 295 300  
 Ser Asn Phe Arg Val Val Pro Ser Gly Asp Val Val Arg Phe Pro Asn  
 305 310 315 320  
 Ile Thr Asn Leu Cys Pro Phe Gly Glu Val Phe Asn Ala Thr Lys Phe  
 325 330 335  
 Pro Ser Val Tyr Ala Trp Glu Arg Lys Lys Ile Ser Asn Cys Val Ala  
 340 345 350  
 Asp Tyr Ser Val Leu Tyr Asn Ser Thr Phe Phe Ser Thr Phe Lys Cys  
 355 360 365  
 Tyr Gly Val Ser Ala Thr Lys Leu Asn Asp Leu Cys Phe Ser Asn Val  
 370 375 380  
 Tyr Ala Asp Ser Phe Val Val Lys Gly Asp Asp Val Arg Gln Ile Ala  
 385 390 395 400  
 Pro Gly Gln Thr Gly Val Ile Ala Asp Tyr Asn Tyr Lys Leu Pro Asp  
 405 410 415  
 Asp Phe Met Gly Cys Val Leu Ala Trp Asn Thr Arg Asn Ile Asp Ala  
 420 425 430  
 Thr Ser Thr Gly Asn Tyr Asn Tyr Lys Tyr Arg Tyr Leu Arg His Gly  
 435 440 445  
 Lys Leu Arg Pro Phe Glu Arg Asp Ile Ser Asn Val Pro Phe Ser Pro  
 450 455 460  
 Asp Gly Lys Pro Cys Thr Pro Pro Ala Leu Asn Cys Tyr Trp Pro Leu  
 465 470 475 480  
 Asn Asp Tyr Gly Phe Tyr Thr Thr Thr Gly Ile Gly Tyr Gln Pro Tyr  
 485 490 495  
 Arg Val Val Val Leu Ser Phe Glu Leu Leu Asn Ala Pro Ala Thr Val  
 500 505 510  
 Cys Gly Pro Lys Leu Ser Thr Asp Leu Ile Lys Asn Gln Cys Val Asn  
 515 520 525

SEQLIST-20480.TXT

Phe Asn Phe Asn Gly Leu Thr Gly Thr Gly Val Leu Thr Pro Ser Ser  
 530 535 540  
 Lys Arg Phe Gln Pro Phe Gln Gln Phe Gly Arg Asp Val Ser Asp Phe  
 545 550 555 560  
 Thr Asp Ser Val Arg Asp Pro Lys Thr Ser Glu Ile Leu Asp Ile Ser  
 565 570 575  
 Pro Cys Ala Phe Gly Gly Val Ser Val Ile Thr Pro Gly Thr Asn Ala  
 580 585 590  
 Ser Ser Glu Val Ala Val Leu Tyr Gln Asp Val Asn Cys Thr Asp Val  
 595 600 605  
 Ser Thr Ala Ile His Ala Asp Gln Leu Thr Pro Ala Trp Arg Ile Tyr  
 610 615 620  
 Ser Thr Gly Asn Asn Val Phe Gln Thr Gln Ala Gly Cys Leu Ile Gly  
 625 630 635 640  
 Ala Glu His Val Asp Thr Ser Tyr Glu Cys Asp Ile Pro Ile Gly Ala  
 645 650 655  
 Gly Ile Cys Ala Ser Tyr His Thr Val Ser Leu Leu Arg Ser Thr Ser  
 660 665 670  
 Gln Lys Ser Ile Val Ala Tyr Thr Met Ser Leu Gly Ala Asp Ser Ser  
 675 680 685  
 Ile Ala Tyr Ser Asn Asn Thr Ile Ala Ile Pro Thr Asn Phe Ser Ile  
 690 695 700  
 Ser Ile Thr Thr Glu Val Met Pro Val Ser Met Ala Lys Thr Ser Val  
 705 710 715 720  
 Asp Cys Asn Met Tyr Ile Cys Gly Asp Ser Thr Glu Cys Ala Asn Leu  
 725 730 735  
 Leu Leu Gln Tyr Gly Ser Phe Cys Thr Gln Leu Asn Arg Ala Leu Ser  
 740 745 750  
 Gly Ile Ala Ala Glu Gln Asp Arg Asn Thr Arg Glu Val Phe Ala Gln  
 755 760 765  
 Val Lys Gln Met Tyr Lys Thr Pro Thr Leu Lys Tyr Phe Gly Gly Phe  
 770 775 780  
 Asn Phe Ser Gln Ile Leu Pro Asp Pro Leu Lys Pro Thr Lys Arg Ser  
 785 790 795 800  
 Phe Ile Glu Asp Leu Leu Phe Asn Lys Val Thr Leu Ala Asp Ala Gly  
 805 810 815  
 Phe Met Lys Gln Tyr Gly Glu Cys Leu Gly Asp Ile Asn Ala Arg Asp  
 820 825 830  
 Leu Ile Cys Ala Gln Lys Phe Asn Gly Leu Thr Val Leu Pro Pro Leu  
 835 840 845  
 Leu Thr Asp Asp Met Ile Ala Ala Tyr Thr Ala Ala Leu Val Ser Gly  
 850 855 860

SEQLIST-20480.TXT

Thr Ala Thr Ala Gly Trp Thr Phe Gly Ala Gly Ala Ala Leu Gln Ile  
 865 870 875 880  
 Pro Phe Ala Met Gln Met Ala Tyr Arg Phe Asn Gly Ile Gly Val Thr  
 885 890 895  
 Gln Asn Val Leu Tyr Glu Asn Gln Lys Gln Ile Ala Asn Gln Phe Asn  
 900 905 910  
 Lys Ala Ile Ser Gln Ile Gln Glu Ser Leu Thr Thr Thr Ser Thr Ala  
 915 920 925  
 Leu Gly Lys Leu Gln Asp Val Val Asn Gln Asn Ala Gln Ala Leu Asn  
 930 935 940  
 Thr Leu Val Lys Gln Leu Ser Ser Asn Phe Gly Ala Ile Ser Ser Val  
 945 950 955 960  
 Leu Asn Asp Ile Leu Ser Arg Leu Asp Lys Val Glu Ala Glu Val Gln  
 965 970 975  
 Ile Asp Arg Leu Ile Thr Gly Arg Leu Gln Ser Leu Gln Thr Tyr Val  
 980 985 990  
 Thr Gln Gln Leu Ile Arg Ala Ala Glu Ile Arg Ala Ser Ala Asn Leu  
 995 1000 1005  
 Ala Ala Thr Lys Met Ser Glu Cys Val Leu Gly Gln Ser Lys Arg Val  
 1010 1015 1020  
 Asp Phe Cys Gly Lys Gly Tyr His Leu Met Ser Phe Pro Gln Ala Ala  
 1025 1030 1035 1040  
 Pro His Gly Val Val Phe Leu His Val Thr Tyr Val Pro Ser Gln Glu  
 1045 1050 1055  
 Arg Asn Phe Thr Thr Ala Pro Ala Ile Cys His Glu Gly Lys Ala Tyr  
 1060 1065 1070  
 Phe Pro Arg Glu Gly Val Phe Val Phe Asn Gly Thr Ser Trp Phe Ile  
 1075 1080 1085  
 Thr Gln Arg Asn Phe Phe Ser Pro Gln Ile Ile Thr Thr Asp Asn Thr  
 1090 1095 1100  
 Phe Val Ser Gly Asn Cys Asp Val Val Ile Gly Ile Ile Asn Asn Thr  
 1105 1110 1115 1120  
 Val Tyr Asp Pro Leu Gln Pro Glu Leu Asp Ser Phe Lys Glu Glu Leu  
 1125 1130 1135  
 Asp Lys Tyr Phe Lys Asn His Thr Ser Pro Asp Val Asp Leu Gly Asp  
 1140 1145 1150  
 Ile Ser Gly Ile Asn Ala Ser Val Val Asn Ile Gln Lys Glu Ile Asp  
 1155 1160 1165  
 Arg Leu Asn Glu Val Ala Lys Asn Leu Asn Glu Ser Leu Ile Asp Leu  
 1170 1175 1180  
 Gln Glu Leu Gly Lys Tyr Glu Gln Tyr Ile Lys Trp Pro Trp Tyr Val  
 1185 1190 1195 1200

SEQLIST-20480.TXT

Trp Leu Gly Phe Ile Ala Gly Leu Ile Ala Ile Val Met Val Thr Ile  
1205 1210 1215

Leu Leu Cys Cys Met Thr Ser Cys Cys Ser Cys Leu Lys Gly Ala Cys  
1220 1225 1230

Ser Cys Gly Ser Cys Cys Lys Phe Asp Glu Asp Asp Ser Glu Pro Val  
1235 1240 1245

Leu Lys Gly Val Lys Leu His Tyr Thr  
1250 1255

<210> 7190  
<211> 1125  
<212> PRT  
<213> SARS coronavirus

<400> 7190  
Lys Asp Met Thr Tyr Arg Arg Leu Ile Ser Met Met Gly Phe Lys Met  
1 5 10 15

Asn Tyr Gln Val Asn Gly Tyr Pro Asn Met Phe Ile Thr Arg Glu Glu  
20 25 30

Ala Ile Arg His Val Arg Ala Trp Ile Gly Phe Asp Val Glu Gly Cys  
35 40 45

His Ala Thr Arg Asp Ala Val Gly Thr Asn Leu Pro Leu Gln Leu Gly  
50 55 60

Phe Ser Thr Gly Val Asn Leu Val Ala Val Pro Thr Gly Tyr Val Asp  
65 70 75 80

Thr Glu Asn Asn Thr Glu Phe Thr Arg Val Asn Ala Lys Pro Pro Pro  
85 90 95

Gly Asp Gln Phe Lys His Leu Ile Pro Leu Met Tyr Lys Gly Leu Pro  
100 105 110

Trp Asn Val Val Arg Ile Lys Ile Val Gln Met Leu Ser Asp Thr Leu  
115 120 125

Lys Gly Leu Ser Asp Arg Val Val Phe Val Leu Trp Ala His Gly Phe  
130 135 140

Glu Leu Thr Ser Met Lys Tyr Phe Val Lys Ile Gly Pro Glu Arg Thr  
145 150 155 160

Cys Cys Leu Cys Asp Lys Arg Ala Thr Cys Phe Ser Thr Ser Ser Asp  
165 170 175

Thr Tyr Ala Cys Trp Asn His Ser Val Gly Phe Asp Tyr Val Tyr Asn  
180 185 190

Pro Phe Met Ile Asp Val Gln Gln Trp Gly Phe Thr Gly Asn Leu Gln  
195 200 205

Ser Asn His Asp Gln His Cys Gln Val His Gly Asn Ala His Val Ala  
210 215 220

Ser Cys Asp Ala Ile Met Thr Arg Cys Leu Ala Val His Glu Cys Phe  
225 230 235 240

SEQLIST-20480.TXT

Val Lys Arg Val Asp Trp Ser Val Glu Tyr Pro Ile Ile Gly Asp Glu  
245 250 255  
Leu Arg Val Asn Ser Ala Cys Arg Lys Val Gln His Met Val Val Lys  
260 270  
Ser Ala Leu Leu Ala Asp Lys Phe Pro Val Leu His Asp Ile Gly Asn  
275 280 285  
Pro Lys Ala Ile Lys Cys Val Pro Gln Ala Glu Val Glu Trp Lys Phe  
290 300  
Tyr Asp Ala Gln Pro Cys Ser Asp Lys Ala Tyr Lys Ile Glu Glu Leu  
305 310 315 320  
Phe Tyr Ser Tyr Ala Ile His His Asp Lys Phe Thr Asp Gly Val Cys  
325 330 335  
Leu Phe Trp Asn Cys Asn Val Asp Arg Tyr Pro Ala Asn Ala Ile Val  
340 345 350  
Cys Arg Phe Asp Thr Arg Val Leu Ser Asn Leu Asn Leu Pro Gly Cys  
355 360 365  
Asp Gly Gly Ser Leu Tyr Val Asn Lys His Ala Phe His Thr Pro Ala  
370 375 380  
Phe Asp Lys Ser Ala Phe Thr Asn Leu Lys Gln Leu Pro Phe Phe Tyr  
385 390 395 400  
Tyr Ser Asp Ser Pro Cys Glu Ser His Gly Lys Gln Val Val Ser Asp  
405 410 415  
Ile Asp Tyr Val Pro Leu Lys Ser Ala Thr Cys Ile Thr Arg Cys Asn  
420 425 430  
Leu Gly Gly Ala Val Cys Arg His His Ala Asn Glu Tyr Arg Gln Tyr  
435 440 445  
Leu Asp Ala Tyr Asn Met Met Ile Ser Ala Gly Phe Ser Leu Trp Ile  
450 455 460  
Tyr Lys Gln Phe Asp Thr Tyr Asn Leu Trp Asn Thr Phe Thr Arg Leu  
465 470 475 480  
Gln Ser Leu Glu Asn Val Ala Tyr Asn Val Val Asn Lys Gly His Phe  
485 490 495  
Asp Gly His Ala Gly Glu Ala Pro Val Ser Ile Ile Asn Asn Ala Val  
500 505 510  
Tyr Thr Lys Val Asp Gly Ile Asp Val Glu Ile Phe Glu Asn Lys Thr  
515 520 525  
Thr Leu Pro Val Asn Val Ala Phe Glu Leu Trp Ala Lys Arg Asn Ile  
530 535 540  
Lys Pro Val Pro Glu Ile Lys Ile Leu Asn Asn Leu Gly Val Asp Ile  
545 550 555 560  
Ala Ala Asn Thr Val Ile Trp Asp Tyr Lys Arg Glu Ala Pro Ala His  
565 570 575

SEQLIST-20480.TXT

Val Ser Thr Ile Gly Val Cys Thr Met Thr Asp Ile Ala Lys Lys Pro  
 580 585 590  
 Thr Glu Ser Ala Cys Ser Ser Leu Thr Val Leu Phe Asp Gly Arg Val  
 595 600 605  
 Glu Gly Gln Val Asp Leu Phe Arg Asn Ala Arg Asn Gly Val Leu Ile  
 610 615 620  
 Thr Glu Gly Ser Val Lys Gly Leu Thr Pro Ser Lys Gly Pro Ala Gln  
 625 630 635 640  
 Ala Ser Val Asn Gly Val Thr Leu Ile Gly Glu Ser Val Lys Thr Gln  
 645 650 655  
 Phe Asn Tyr Phe Lys Lys Val Asp Gly Ile Ile Gln Gln Leu Pro Glu  
 660 665 670  
 Thr Tyr Phe Thr Gln Ser Arg Asp Leu Glu Asp Phe Lys Pro Arg Ser  
 675 680 685  
 Gln Met Glu Thr Asp Phe Leu Glu Leu Ala Met Asp Glu Phe Ile Gln  
 690 695 700  
 Arg Tyr Lys Leu Glu Gly Tyr Ala Phe Glu His Ile Val Tyr Gly Asp  
 705 710 715 720  
 Phe Ser His Gly Gln Leu Gly Gly Leu His Leu Met Ile Gly Leu Ala  
 725 730 735  
 Lys Arg Ser Gln Asp Ser Pro Leu Lys Leu Glu Asp Phe Ile Pro Met  
 740 745 750  
 Asp Ser Thr Val Lys Asn Tyr Phe Ile Thr Asp Ala Gln Thr Gly Ser  
 755 760 765  
 Ser Lys Cys Val Cys Ser Val Ile Asp Leu Leu Leu Asp Asp Phe Val  
 770 775 780  
 Glu Ile Ile Lys Ser Gln Asp Leu Ser Val Ile Ser Lys Val Val Lys  
 785 790 795 800  
 Val Thr Ile Asp Tyr Ala Glu Ile Ser Phe Met Leu Trp Cys Lys Asp  
 805 810 815  
 Gly His Val Glu Thr Phe Tyr Pro Lys Leu Gln Ala Ser Gln Ala Trp  
 820 825 830  
 Gln Pro Gly Val Ala Met Pro Asn Leu Tyr Lys Met Gln Arg Met Leu  
 835 840 845  
 Leu Glu Lys Cys Asp Leu Gln Asn Tyr Gly Glu Asn Ala Val Ile Pro  
 850 855 860  
 Lys Gly Ile Met Met Asn Val Ala Lys Tyr Thr Gln Leu Cys Gln Tyr  
 865 870 875 880  
 Leu Asn Thr Leu Thr Leu Ala Val Pro Tyr Asn Met Arg Val Ile His  
 885 890 895  
 Phe Gly Ala Gly Ser Asp Lys Gly Val Ala Pro Gly Thr Ala Val Leu  
 900 905 910

SEQLIST-20480.TXT

Arg Gln Trp Leu Pro Thr Gly Thr Leu Leu Val Asp Ser Asp Leu Asn  
 915 920  
 Asp Phe Val Ser Asp Ala Asp Ser Thr Leu Ile Gly Asp Cys Ala Thr  
 930 935 940  
 Val His Thr Ala Asn Lys Trp Asp Leu Ile Ile Ser Asp Met Tyr Asp  
 945 950 955 960  
 Pro Arg Thr Lys His Val Thr Lys Glu Asn Asp Ser Lys Glu Gly Phe  
 965 970 975  
 Phe Thr Tyr Leu Cys Gly Phe Ile Lys Gln Lys Leu Ala Leu Gly Gly  
 980 985 990  
 Ser Ile Ala Val Lys Ile Thr Glu His Ser Trp Asn Ala Asp Leu Tyr  
 995 1000 1005  
 Lys Leu Met Gly His Phe Ser Trp Trp Thr Ala Phe Val Thr Asn Val  
 1010 1015 1020  
 Asn Ala Ser Ser Ser Glu Ala Phe Leu Ile Gly Ala Asn Tyr Leu Gly  
 1025 1030 1035 1040  
 Lys Pro Lys Glu Gln Ile Asp Gly Tyr Thr Met His Ala Asn Tyr Ile  
 1045 1050 1055  
 Phe Trp Arg Asn Thr Asn Pro Ile Gln Leu Ser Ser Tyr Ser Leu Phe  
 1060 1065 1070  
 Asp Met Ser Lys Phe Pro Leu Lys Leu Arg Gly Thr Ala Val Met Ser  
 1075 1080 1085  
 Leu Lys Glu Asn Gln Ile Asn Asp Met Ile Tyr Ser Leu Leu Glu Lys  
 1090 1095 1100  
 Gly Arg Leu Ile Ile Arg Glu Asn Asn Arg Val Val Val Ser Ser Asp  
 1105 1110 1115 1120  
 Ile Leu Val Asn Asn  
 1125

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 <212> DNA  
 <213> SARS coronavirus

<400> 7191  
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 attggctttg atgtagaggg ctgtcatgca actagagatg ctgtgggtac taacctacct 180  
 ctccagctag gattttctac aggtgttaac ttagtagctg taccgactgg ttatgttgac 240  
 actgaaaata acacagaatt caccagagtt aatgcaaaac ctccaccagg tgaccagttt 300  
 aaacatctta taccactcat gtataaaggc ttgccctgga atgtagtgcg tattaagata 360  
 gtacaaatgc tcagtgtatc actgaaagga ttgtcagaca gagtcgtgtt cgtcctttgg 420  
 gcgcattggt ttgagcttac atcaatgaag tactttgtca agattggacc tgaaagaacg 480  
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 tggaatcatt ctgtgggttt tgactatgtc tataacccat ttatgattga tgttcagcag 600  
 tggggcttta cgggtaacct tcagagtaac catgaccaac attgccaggg acatggaaat 660  
 gcacatgtgg ctagtgtgtg tgctatcatg actagatgtt tagcagtcca tgagtgttt 720  
 gttgaagcgc ttgattggtc tgttgaatac cctattatag gagatgaact gaggggtaat 780  
 tctgcttgca gaaaagtaca acacatgggt gtgaagtctg cattgcttgc tgataagttt 840  
 ccagttcttc atgacatagg aaatccaaag gctatcaagt gtgtgcctca ggctgaagta 900



SEQLIST-20480.TXT

gaatggaagt	tctacgatgc	tcagccatgt	agtgcacaaag	cttacaaaat	agaggaactc	960
ttctattctt	atgctataca	tcacgataaa	ttcactgatg	gtgtttgttt	gttttggaat	1020
tgtaacgttg	atcgttaccc	agccaatgca	attgtgtgta	ggtttgacac	aagagtcctg	1080
tcaaacttga	acttaccagg	ctgtgatggt	ggtagtttgt	atgtgaataa	gcatgcattc	1140
cacactccag	ctttcgataa	aagtgcattt	actaatttaa	agcaattgcc	tttcttttac	1200
tattctgata	gtccttgtga	gtctcatggc	aaacaagtag	tgtcggatat	tgattatggt	1260
ccactcaaat	ctgctacgtg	tattacacga	tgcaatttag	gtgggtgctgt	ttgcagacac	1320
catgcaaatg	agtaccgaca	gtacttggat	gcatataata	tgatgatatt	tgctggattt	1380
agcctatgga	tttaacaaca	atttgatact	tataacctgt	ggaatacatt	taccaggtta	1440
cagagtttag	aaaatgtggc	ttataatggt	gttaataaag	gacactttga	tggacacgcc	1500
ggcgaagcac	ctgtttccat	cattaataat	gctgtttaca	caaaggtaga	tggattatgat	1560
gtggagatct	ttgaaaataa	gacaacactt	cctgttaatg	ttgcatttga	gctttgggct	1620
aagcgttaag	tttaaccagt	gccagagatt	aagataatga	ataatttggg	tgttgatata	1680
gctgctaata	ctgtaatctg	ggactacaaa	agagaagccc	cagcacatgt	atctacaata	1740
ggtgtctgca	caatgactga	cattgccaaag	aaacctactg	agagtgcctg	ttcttcactt	1800
actgtcttgt	ttgatggtag	agtggaaagga	caggtagacc	tttttagaaa	cgcccgtaat	1860
ggtgttttga	taacagaagg	ttcagtcaaa	ggtctaacac	cttcaaaggg	accagcaca	1920
gctagcgtca	atggagtgag	attaattgga	gaatcagtaa	aaacacagtt	taactacttt	1980
aagaaagtag	acggcattat	tcaacagttg	cctgaaacct	actttactca	gagcagagac	2040
ttagaggatt	ttaagcccag	atcacaaaatg	gaaactgact	ttctcgagct	cgctatggat	2100
gaattcatac	agcgatataa	gctcgagggc	tatgccttcg	aacacatcgt	ttatggagat	2160
ttcagtcag	gacaacttgg	cggtcttcat	ttaatgatag	gcttagccaa	gcgctcaca	2220
gattcaccac	ttaaattaga	ggattttatc	cctatggaca	gcacagtga	aaattacttc	2280
ataacagatg	cgcaaacagg	ttcatcaaaa	tgtgtgtgtt	ctgtgattga	tcttttactt	2340
gatgactttg	tcgagataat	aaagtcacaa	gatttgtcag	tgatttcaaa	agtggcgaag	2400
gttacaaattg	actatgctga	aatttcattc	atgctttggg	gtaaggatgg	acatgttgaa	2460
accttctacc	caaaaactaca	agcaagtcaa	gcgtggcaac	cagggtgttg	gatgcctaac	2520
ttgtacaaga	tgcaaaagaa	gcttcttgaa	aagtgtgacc	ttcagaatta	tggtgaaaat	2580
gctgtttatac	caaaaaggaat	aatgatgaat	gtcgcacaa	atactcaact	gtgtcaatac	2640
ttaaatacac	ttacttttag	gttaccctac	aacatgagag	ttattcactt	tggtgctggc	2700
tctgataaag	gagttgcacc	aggtacagct	gtgctcagac	aatgggtgcc	aactggcaca	2760
ctacttgtcg	attcagatct	taatgacttc	gtctccgacg	cagattctac	tttaattgga	2820
gactgtgcaa	cagtacatac	ggctaataaa	tgggacctta	ttattagcga	tatgtatgac	2880
cctaggacca	aacatgtgac	aaaagagaa	gactctaag	aagggttttt	cacttatctg	2940
tgtggattta	taaagcaaaa	actagccctg	ggtggttcta	tagctgtaaa	gataacagag	3000
cattcttgga	atgctgacct	ttacaagctt	atggggccatt	tctcatgggt	gacagctttt	3060
gttacaaatg	ataatgcata	atcatcgga	gcatttttaa	ttggggctaa	ctatcttggc	3120
aagccgaagg	aacaaattga	tggctatacc	actacatttt	ctggagggaac	ctggagggaac	3180
acaaatccta	tccagttgtc	ttcctattca	ctctttgaca	tgagcaaatt	tccctttaa	3240
ttaagaggaa	ctgctgtaat	gtctcttaag	gagaatcaaa	tcaatgatat	gatttattct	3300
cttctggaaa	aaggtaggct	tatcattaga	gaaaacaaca	gagttgtggt	ttcaagtgat	3360
attcttgtaa	acaactaa					3378

<210> 7192  
 <211> 127  
 <212> PRT  
 <213> SARS coronavirus

<400> 7192  
 Pro Phe Ala Met Gln Met Ala Tyr Arg Phe Asn Gly Ile Gly Val Thr  
 1 5 10 15  
 Gln Asn Val Leu Tyr Glu Asn Gln Lys Gln Ile Ala Asn Gln Phe Asn  
 20 25 30  
 Lys Ala Ile Ser Gln Ile Gln Glu Ser Leu Thr Thr Thr Ser Thr Ala  
 35 40 45  
 Leu Gly Lys Leu Gln Asp Val Val Asn Gln Asn Ala Gln Ala Leu Asn  
 50 55 60  
 Thr Leu Val Lys Gln Leu Ser Ser Asn Phe Gly Ala Ile Ser Ser Val  
 65 70 75 80

SEQLIST-20480.TXT

Leu Asn Asp Ile Leu Ser Arg Leu Asp Lys Val Glu Ala Glu Val Gln  
85 90 95

Ile Asp Arg Leu Ile Thr Gly Arg Leu Gln Ser Leu Gln Thr Tyr Val  
100 105 110

Thr Gln Gln Leu Ile Arg Ala Ala Glu Ile Arg Ala Ser Ala Asn  
115 120 125

<210> 7193

<211> 102

<212> PRT

<213> SARS coronavirus

<400> 7193

Pro Phe Ala Met Gln Met Ala Tyr Arg Phe Asn Gly Ile Gly Val Thr  
1 5 10 15

Gln Asn Val Leu Tyr Glu Asn Gln Lys Gln Ile Ala Asn Gln Phe Asn  
20 25 30

Lys Ala Ile Ser Gln Ile Gln Glu Ser Leu Thr Thr Thr Ser Thr Ala  
35 40 45

Leu Gly Lys Leu Gln Asp Val Val Asn Gln Asn Ala Gln Ala Leu Asn  
50 55 60

Thr Leu Val Lys Gln Leu Ser Ser Asn Phe Gly Ala Ile Ser Ser Val  
65 70 75 80

Leu Asn Asp Ile Leu Ser Arg Leu Asp Lys Val Glu Ala Glu Val Gln  
85 90 95

Ile Asp Arg Leu Ile Thr  
100

<210> 7194

<211> 105

<212> PRT

<213> SARS coronavirus

<400> 7194

Asn Gln Lys Gln Ile Ala Asn Gln Phe Asn Lys Ala Ile Ser Gln Ile  
1 5 10 15

Gln Glu Ser Leu Thr Thr Thr Ser Thr Ala Leu Gly Lys Leu Gln Asp  
20 25 30

Val Val Asn Gln Asn Ala Gln Ala Leu Asn Thr Leu Val Lys Gln Leu  
35 40 45

Ser Ser Asn Phe Gly Ala Ile Ser Ser Val Leu Asn Asp Ile Leu Ser  
50 55 60

Arg Leu Asp Lys Val Glu Ala Glu Val Gln Ile Asp Arg Leu Ile Thr  
65 70 75 80

Gly Arg Leu Gln Ser Leu Gln Thr Tyr Val Thr Gln Gln Leu Ile Arg  
85 90 95

Ala Ala Glu Ile Arg Ala Ser Ala Asn  
100 105

SEQLIST-20480.TXT

<210> 7195  
 <211> 58  
 <212> PRT  
 <213> SARS coronavirus

<400> 7195  
 Pro Asp Val Asp Leu Gly Asp Ile Ser Gly Ile Asn Ala Ser Val Val  
 1 5 10 15  
 Asn Ile Gln Lys Glu Ile Asp Arg Leu Asn Glu Val Ala Lys Asn Leu  
 20 25 30  
 Asn Glu Ser Leu Ile Asp Leu Gln Glu Leu Gly Lys Tyr Glu Gln Tyr  
 35 40 45  
 Ile Lys Trp Pro Trp Tyr Val Trp Leu Gly  
 50 55

<210> 7196  
 <211> 52  
 <212> PRT  
 <213> SARS coronavirus

<400> 7196  
 Pro Asp Val Asp Leu Gly Asp Ile Ser Gly Ile Asn Ala Ser Val Val  
 1 5 10 15  
 Asn Ile Gln Lys Glu Ile Asp Arg Leu Asn Glu Val Ala Lys Asn Leu  
 20 25 30  
 Asn Glu Ser Leu Ile Asp Leu Gln Glu Leu Gly Lys Tyr Glu Gln Tyr  
 35 40 45  
 Ile Lys Trp Pro  
 50

<210> 7197  
 <211> 19  
 <212> PRT  
 <213> SARS coronavirus

<400> 7197  
 Lys Gln Ile Ala Asn Gln Phe Asn Lys Ala Ile Ser Gln Ile Gln Glu  
 1 5 10 15  
 Ser Leu Thr

<210> 7198  
 <211> 17  
 <212> PRT  
 <213> SARS coronavirus

<400> 7198  
 His Leu Met Ser Phe Pro Gln Ala Ala Pro His Gly Val Val Phe Leu  
 1 5 10 15  
 His

<210> 7199  
 <211> 20

SEQLIST-20480.TXT

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<212>    PRT
<213>    SARS coronavirus

<400>    7199
Ala Ala Leu Val Ser Gly Thr Ala Thr Ala Gly Trp Thr Phe Gly Ala
1          5          10          15

Gly Ala Ala Leu
                20

<210>    7200
<211>    513
<212>    PRT
<213>    Artificial Sequence

<220>
<223>    Fusion polypeptide (SARS coronavirus & Neisseria meningitidis)

<400>    7200
Met Lys His Phe Pro Ser Lys Val Leu Thr Thr Ala Ile Leu Ala Thr
1          5          10          15

Phe Cys Ser Gly Ala Leu Ala Ala Thr Asn Asp Asp Asp Pro Phe Ala
                20          25          30

Met Gln Met Ala Tyr Arg Phe Asn Gly Ile Gly Val Thr Gln Asn Val
35          40          45

Leu Tyr Glu Asn Gln Lys Gln Ile Ala Asn Gln Phe Asn Lys Ala Ile
50          55          60

Ser Gln Ile Gln Glu Ser Leu Thr Thr Thr Ser Thr Ala Leu Gly Lys
65          70          75          80

Leu Gln Asp Val Val Asn Gln Asn Ala Gln Ala Leu Asn Thr Leu Val
85          90          95

Lys Gln Leu Ser Ser Asn Phe Gly Ala Ile Ser Ser Val Leu Asn Asp
100         105         110

Ile Leu Ser Arg Leu Asp Lys Val Glu Ala Glu Val Gln Ile Asp Arg
115         120         125

Leu Ile Thr Gly Gly Gly Gly Gly Gly Pro Asp Val Asp Phe Gly Asp
130         135         140

Ile Ser Gly Ile Asn Ala Ser Val Val Asn Ile Gln Lys Glu Ile Asp
145         150         155         160

Arg Leu Asn Glu Val Ala Lys Asn Leu Asn Glu Ser Leu Ile Asp Leu
165         170         175

Gln Glu Leu Gly Lys Tyr Glu Gln Tyr Ile Lys Trp Pro Gly Gly Gly
180         185         190

Gly Ser Gly Lys Val Val Thr Asn Leu Thr Lys Thr Val Asn Glu Asn
195         200         205

Lys Gln Asn Val Asp Ala Lys Val Lys Ala Ala Glu Ser Glu Ile Glu
210         215         220

Lys Leu Thr Thr Lys Leu Ala Asp Thr Asp Ala Ala Leu Ala Asp Thr
225         230         235         240

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SEQLIST-20480.TXT

Asp Ala Ala Leu Asp Ala Thr Thr Asn Ala Leu Asn Lys Leu Gly Glu  
 245 250 255  
 Asn Ile Thr Thr Phe Ala Glu Glu Thr Lys Thr Asn Ile Val Lys Ile  
 260 265 270  
 Asp Glu Lys Leu Glu Ala Val Ala Asp Thr Val Asp Lys His Ala Glu  
 275 280 285  
 Ala Phe Asn Asp Ile Ala Asp Ser Leu Asp Glu Thr Asn Thr Lys Ala  
 290 295 300  
 Asp Glu Ala Val Lys Thr Ala Asn Glu Ala Lys Gln Thr Ala Glu Glu  
 305 310 315 320  
 Thr Lys Gln Asn Val Asp Ala Lys Val Lys Ala Ala Glu Thr Ala Ala  
 325 330 335  
 Gly Lys Ala Glu Ala Ala Ala Gly Thr Ala Asn Thr Ala Ala Asp Lys  
 340 345 350  
 Ala Glu Ala Val Ala Ala Lys Val Thr Asp Ile Lys Ala Asp Ile Ala  
 355 360 365  
 Thr Asn Lys Asp Asn Ile Ala Lys Lys Ala Asn Ser Ala Asp Val Tyr  
 370 375 380  
 Thr Arg Glu Glu Ser Asp Ser Lys Phe Val Arg Ile Asp Gly Leu Asn  
 385 390 395 400  
 Ala Thr Thr Glu Lys Leu Asp Thr Arg Leu Ala Ser Ala Glu Lys Ser  
 405 410 415  
 Ile Ala Asp His Asp Thr Arg Leu Asn Gly Leu Asp Lys Thr Val Ser  
 420 425 430  
 Asp Leu Arg Lys Glu Thr Arg Gln Gly Leu Ala Glu Gln Ala Ala Leu  
 435 440 445  
 Ser Gly Leu Phe Gln Pro Tyr Asn Val Gly Arg Phe Asn Val Thr Ala  
 450 455 460  
 Ala Val Gly Gly Tyr Lys Ser Glu Ser Ala Val Ala Ile Gly Thr Gly  
 465 470 475 480  
 Phe Arg Phe Thr Glu Asn Phe Ala Ala Lys Ala Gly Val Ala Val Gly  
 485 490 495  
 Thr Ser Ser Gly Ser Ser Ala Ala Tyr His Val Gly Val Asn Tyr Glu  
 500 505 510

Trp

<210> 7201  
 <211> 458  
 <212> PRT  
 <213> Artificial Sequence  
  
 <220>  
 <223> Fusion polypeptide (SARS coronavirus & Neisseria meningitidis)

SEQLIST-20480.TXT

<400> 7201

```

Met Lys His Phe Pro Ser Lys Val Leu Thr Thr Ala Ile Leu Ala Thr
1      5      10      15
Phe Cys Ser Gly Ala Leu Ala Ala Thr Asn Asp Asp Asp Pro Phe Ala
20      25      30
Met Gln Met Ala Tyr Arg Phe Asn Gly Ile Gly Val Thr Gln Asn Val
35      40      45
Leu Tyr Glu Asn Gln Lys Gln Ile Ala Asn Gln Phe Asn Lys Ala Ile
50      55      60
Ser Gln Ile Gln Glu Ser Leu Thr Thr Thr Ser Thr Ala Leu Gly Lys
65      70      75      80
Leu Gln Asp Val Val Asn Gln Asn Ala Gln Ala Leu Asn Thr Leu Val
85      90      95
Lys Gln Leu Ser Ser Asn Phe Gly Ala Ile Ser Ser Val Leu Asn Asp
100     105     110
Ile Leu Ser Arg Leu Asp Lys Val Glu Ala Glu Val Gln Ile Asp Arg
115     120     125
Leu Ile Thr Gly Gly Gly Gly Gly Gly Pro Asp Val Asp Phe Gly Asp
130     135     140
Ile Ser Gly Ile Asn Ala Ser Val Val Asn Ile Gln Lys Glu Ile Asp
145     150     155     160
Arg Leu Asn Glu Val Ala Lys Asn Leu Asn Glu Ser Leu Ile Asp Leu
165     170     175
Gln Glu Leu Gly Lys Tyr Glu Gln Tyr Ile Lys Trp Pro Gly Gly Gly
180     185     190
Gly Ser Gly Lys Val Val Thr Asn Leu Thr Lys Thr Val Asn Glu Asn
195     200     205
Lys Gln Asn Val Asp Ala Lys Val Lys Ala Ala Glu Ser Glu Ile Glu
210     215     220
Lys Leu Thr Thr Lys Leu Ala Asp Thr Asp Ala Ala Leu Ala Asp Thr
225     230     235     240
Asp Ala Ala Leu Asp Ala Thr Thr Asn Ala Leu Asn Lys Leu Gly Glu
245     250     255
Asn Ile Thr Thr Phe Ala Glu Glu Thr Lys Thr Asn Ile Val Lys Ile
260     265     270
Asp Glu Lys Leu Glu Ala Val Ala Asp Thr Val Asp Lys His Ala Glu
275     280     285
Ala Phe Asn Asp Ile Ala Asp Ser Leu Asp Glu Thr Asn Thr Lys Ala
290     295     300
Asp Glu Ala Val Lys Thr Ala Asn Glu Ala Lys Gln Thr Ala Glu Glu
305     310     315     320
Thr Lys Gln Asn Val Asp Ala Lys Val Lys Ala Ala Glu Thr Ala Ala
325     330     335

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SEQLIST-20480.TXT

Gly Lys Ala Glu Ala Ala Ala Gly Thr Ala Asn Thr Ala Ala Asp Lys  
340 345 350  
Ala Glu Ala Val Ala Ala Lys Val Thr Asp Ile Lys Ala Asp Ile Ala  
355 360 365  
Thr Asn Lys Asp Asn Ile Ala Lys Lys Ala Asn Ser Ala Asp Val Tyr  
370 375 380  
Thr Arg Glu Glu Ser Asp Ser Lys Phe Val Arg Ile Asp Gly Leu Asn  
385 390 395 400  
Ala Thr Thr Glu Lys Leu Asp Thr Arg Leu Ala Ser Ala Glu Lys Ser  
405 410 415  
Ile Ala Asp His Asp Thr Arg Leu Asn Gly Leu Asp Lys Thr Val Ser  
420 425 430  
Asp Leu Arg Lys Glu Thr Arg Gln Gly Leu Ala Glu Gln Ala Ala Leu  
435 440 445  
Ser Gly Leu Phe Gln Pro Tyr Asn Val Gly  
450 455

<210> 7202

<211> 670

<212> PRT

<213> Artificial Sequence

<220>

<223> Fusion polypeptide (SARS coronavirus & Neisseria meningitidis)

<400> 7202

Met Lys His Phe Pro Ser Lys Val Leu Thr Thr Ala Ile Leu Ala Thr  
1 5 10 15  
Phe Cys Ser Gly Ala Leu Ala Ala Thr Asn Asp Asp Asp Pro Phe Ala  
20 25 30  
Met Gln Met Ala Tyr Arg Phe Asn Gly Ile Gly Val Thr Gln Asn Val  
35 40 45  
Leu Tyr Glu Asn Gln Lys Gln Ile Ala Asn Gln Phe Asn Lys Ala Ile  
50 55 60  
Ser Gln Ile Gln Glu Ser Leu Thr Thr Thr Ser Thr Ala Leu Gly Lys  
65 70 75 80  
Leu Gln Asp Val Val Asn Gln Asn Ala Gln Ala Leu Asn Thr Leu Val  
85 90 95  
Lys Gln Leu Ser Ser Asn Phe Gly Ala Ile Ser Ser Val Leu Asn Asp  
100 105 110  
Ile Leu Ser Arg Leu Asp Lys Val Glu Ala Glu Val Gln Ile Asp Arg  
115 120 125  
Leu Ile Thr Gly Arg Leu Gln Ser Leu Gln Thr Tyr Val Thr Gln Gln  
130 135 140  
Leu Ile Arg Ala Ala Glu Ile Arg Ala Ser Ala Asn Leu Ala Ala Thr  
145 150 155 160

SEQLIST-20480.TXT

Lys Met Ser Glu Cys Val Leu Gly Gln Ser Lys Arg Val Asp Phe Cys  
 165 170 175  
 Gly Lys Gly Tyr His Leu Met Ser Phe Pro Gln Ala Ala Pro His Gly  
 180 185 190  
 Val Val Phe Leu His Val Thr Tyr Val Pro Ser Gln Glu Arg Asn Phe  
 195 200 205  
 Thr Thr Ala Pro Ala Ile Cys His Glu Gly Lys Ala Tyr Phe Pro Arg  
 210 215 220  
 Glu Gly Val Phe Val Phe Asn Gly Thr Ser Trp Phe Ile Thr Gln Arg  
 225 230 235 240  
 Asn Phe Phe Ser Pro Gln Ile Ile Thr Thr Asp Asn Thr Phe Val Ser  
 245 250 255  
 Gly Asn Cys Asp Val Val Ile Gly Ile Ile Asn Asn Thr Val Tyr Asp  
 260 265 270  
 Pro Leu Gln Pro Glu Leu Asp Ser Phe Lys Glu Glu Leu Asp Lys Tyr  
 275 280 285  
 Phe Lys Asn His Thr Ser Pro Asp Val Asp Phe Gly Asp Ile Ser Gly  
 290 295 300  
 Ile Asn Ala Ser Val Val Asn Ile Gln Lys Glu Ile Asp Arg Leu Asn  
 305 310 315 320  
 Glu Val Ala Lys Asn Leu Asn Glu Ser Leu Ile Asp Leu Gln Glu Leu  
 325 330 335  
 Gly Lys Tyr Glu Gln Tyr Ile Lys Trp Pro Gly Gly Gly Gly Ser Gly  
 340 345 350  
 Lys Val Val Thr Asn Leu Thr Lys Thr Val Asn Glu Asn Lys Gln Asn  
 355 360 365  
 Val Asp Ala Lys Val Lys Ala Ala Glu Ser Glu Ile Glu Lys Leu Thr  
 370 375 380  
 Thr Lys Leu Ala Asp Thr Asp Ala Ala Leu Ala Asp Thr Asp Ala Ala  
 385 390 395 400  
 Leu Asp Ala Thr Thr Asn Ala Leu Asn Lys Leu Gly Glu Asn Ile Thr  
 405 410 415  
 Thr Phe Ala Glu Glu Thr Lys Thr Asn Ile Val Lys Ile Asp Glu Lys  
 420 425 430  
 Leu Glu Ala Val Ala Asp Thr Val Asp Lys His Ala Glu Ala Phe Asn  
 435 440 445  
 Asp Ile Ala Asp Ser Leu Asp Glu Thr Asn Thr Lys Ala Asp Glu Ala  
 450 455 460  
 Val Lys Thr Ala Asn Glu Ala Lys Gln Thr Ala Glu Glu Thr Lys Gln  
 465 470 475 480  
 Asn Val Asp Ala Lys Val Lys Ala Ala Glu Thr Ala Ala Gly Lys Ala  
 485 490 495



SEQLIST-20480.TXT

Glu Ala Ala Ala Gly Thr Ala Asn Thr Ala Ala Asp Lys Ala Glu Ala  
500 505 510

Val Ala Ala Lys Val Thr Asp Ile Lys Ala Asp Ile Ala Thr Asn Lys  
515 520 525

Asp Asn Ile Ala Lys Lys Ala Asn Ser Ala Asp Val Tyr Thr Arg Glu  
530 535 540

Glu Ser Asp Ser Lys Phe Val Arg Ile Asp Gly Leu Asn Ala Thr Thr  
545 550 555 560

Glu Lys Leu Asp Thr Arg Leu Ala Ser Ala Glu Lys Ser Ile Ala Asp  
565 570 575

His Asp Thr Arg Leu Asn Gly Leu Asp Lys Thr Val Ser Asp Leu Arg  
580 585 590

Lys Glu Thr Arg Gln Gly Leu Ala Glu Gln Ala Ala Leu Ser Gly Leu  
595 600 605

Phe Gln Pro Tyr Asn Val Gly Arg Phe Asn Val Thr Ala Ala Val Gly  
610 615 620

Gly Tyr Lys Ser Glu Ser Ala Val Ala Ile Gly Thr Gly Phe Arg Phe  
625 630 635 640

Thr Glu Asn Phe Ala Ala Lys Ala Gly Val Ala Val Gly Thr Ser Ser  
645 650 655

Gly Ser Ser Ala Ala Tyr His Val Gly Val Asn Tyr Glu Trp  
660 665 670

<210> 7203  
<211> 615  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Fusion polypeptide (SARS coronavirus & Neisseria meningitidis)

<400> 7203  
Met Lys His Phe Pro Ser Lys Val Leu Thr Thr Ala Ile Leu Ala Thr  
1 5 10 15

Phe Cys Ser Gly Ala Leu Ala Ala Thr Asn Asp Asp Asp Pro Phe Ala  
20 25 30

Met Gln Met Ala Tyr Arg Phe Asn Gly Ile Gly Val Thr Gln Asn Val  
35 40 45

Leu Tyr Glu Asn Gln Lys Gln Ile Ala Asn Gln Phe Asn Lys Ala Ile  
50 55 60

Ser Gln Ile Gln Glu Ser Leu Thr Thr Thr Ser Thr Ala Leu Gly Lys  
65 70 75 80

Leu Gln Asp Val Val Asn Gln Asn Ala Gln Ala Leu Asn Thr Leu Val  
85 90 95

Lys Gln Leu Ser Ser Asn Phe Gly Ala Ile Ser Ser Val Leu Asn Asp  
100 105 110

SEQLIST-20480.TXT

Ile Leu Ser Arg Leu Asp Lys Val Glu Ala Glu Val Gln Ile Asp Arg  
115 120 125  
Leu Ile Thr Gly Arg Leu Gln Ser Leu Gln Thr Tyr Val Thr Gln Gln  
130 135 140  
Leu Ile Arg Ala Ala Glu Ile Arg Ala Ser Ala Asn Leu Ala Ala Thr  
145 150 155 160  
Lys Met Ser Glu Cys Val Leu Gly Gln Ser Lys Arg Val Asp Phe Cys  
165 170 175  
Gly Lys Gly Tyr His Leu Met Ser Phe Pro Gln Ala Ala Pro His Gly  
180 185 190  
Val Val Phe Leu His Val Thr Tyr Val Pro Ser Gln Glu Arg Asn Phe  
195 200 205  
Thr Thr Ala Pro Ala Ile Cys His Glu Gly Lys Ala Tyr Phe Pro Arg  
210 215 220  
Glu Gly Val Phe Val Phe Asn Gly Thr Ser Trp Phe Ile Thr Gln Arg  
225 230 235 240  
Asn Phe Phe Ser Pro Gln Ile Ile Thr Thr Asp Asn Thr Phe Val Ser  
245 250 255  
Gly Asn Cys Asp Val Val Ile Gly Ile Ile Asn Asn Thr Val Tyr Asp  
260 265 270  
Pro Leu Gln Pro Glu Leu Asp Ser Phe Lys Glu Glu Leu Asp Lys Tyr  
275 280 285  
Phe Lys Asn His Thr Ser Pro Asp Val Asp Phe Gly Asp Ile Ser Gly  
290 295 300  
Ile Asn Ala Ser Val Val Asn Ile Gln Lys Glu Ile Asp Arg Leu Asn  
305 310 315 320  
Glu Val Ala Lys Asn Leu Asn Glu Ser Leu Ile Asp Leu Gln Glu Leu  
325 330 335  
Gly Lys Tyr Glu Gln Tyr Ile Lys Trp Pro Gly Gly Gly Gly Ser Gly  
340 345 350  
Lys Val Val Thr Asn Leu Thr Lys Thr Val Asn Glu Asn Lys Gln Asn  
355 360 365  
Val Asp Ala Lys Val Lys Ala Ala Glu Ser Glu Ile Glu Lys Leu Thr  
370 375 380  
Thr Lys Leu Ala Asp Thr Asp Ala Ala Leu Ala Asp Thr Asp Ala Ala  
385 390 395 400  
Leu Asp Ala Thr Thr Asn Ala Leu Asn Lys Leu Gly Glu Asn Ile Thr  
405 410 415  
Thr Phe Ala Glu Glu Thr Lys Thr Asn Ile Val Lys Ile Asp Glu Lys  
420 425 430  
Leu Glu Ala Val Ala Asp Thr Val Asp Lys His Ala Glu Ala Phe Asn  
435 440 445

SEQLIST-20480.TXT

Asp Ile Ala Asp Ser Leu Asp Glu Thr Asn Thr Lys Ala Asp Glu Ala  
450 455 460  
Val Lys Thr Ala Asn Glu Ala Lys Gln Thr Ala Glu Glu Thr Lys Gln  
465 470 475 480  
Asn Val Asp Ala Lys Val Lys Ala Ala Glu Thr Ala Ala Gly Lys Ala  
485 490 495  
Glu Ala Ala Ala Gly Thr Ala Asn Thr Ala Ala Asp Lys Ala Glu Ala  
500 505 510  
Val Ala Ala Lys Val Thr Asp Ile Lys Ala Asp Ile Ala Thr Asn Lys  
515 520 525  
Asp Asn Ile Ala Lys Lys Ala Asn Ser Ala Asp Val Tyr Thr Arg Glu  
530 535 540  
Glu Ser Asp Ser Lys Phe Val Arg Ile Asp Gly Leu Asn Ala Thr Thr  
545 550 555 560  
Glu Lys Leu Asp Thr Arg Leu Ala Ser Ala Glu Lys Ser Ile Ala Asp  
565 570 575  
His Asp Thr Arg Leu Asn Gly Leu Asp Lys Thr Val Ser Asp Leu Arg  
580 585 590  
Lys Glu Thr Arg Gln Gly Leu Ala Glu Gln Ala Ala Leu Ser Gly Leu  
595 600 605  
Phe Gln Pro Tyr Asn Val Gly  
610 615

<210> 7204

<211> 592

<212> PRT

<213> Artificial Sequence

<220>

<223> Fusion polypeptide (SARS coronavirus & Neisseria meningitidis)

<400> 7204

Pro Phe Ala Met Gln Met Ala Tyr Arg Phe Asn Gly Ile Gly Val Thr  
1 5 10 15  
Gln Asn Val Leu Tyr Glu Asn Gln Lys Gln Ile Ala Asn Gln Phe Asn  
20 25 30  
Lys Ala Ile Ser Gln Ile Gln Glu Ser Leu Thr Thr Thr Ser Thr Ala  
35 40 45  
Leu Gly Lys Leu Gln Asp Val Val Asn Gln Asn Ala Gln Ala Leu Asn  
50 55 60  
Thr Leu Val Lys Gln Leu Ser Ser Asn Phe Gly Ala Ile Ser Ser Val  
65 70 75 80  
Leu Asn Asp Ile Leu Ser Arg Leu Asp Lys Val Glu Ala Glu Val Gln  
85 90 95  
Ile Asp Arg Leu Ile Thr Gly Arg Leu Gln Ser Leu Gln Thr Tyr Val  
100 105 110

SEQLIST-20480.TXT

Thr Gln Gln Leu Ile Arg Ala Ala Glu Ile Arg Ala Ser Ala Asn Leu  
 115 120 125  
 Ala Ala Thr Lys Met Ser Glu Cys Val Leu Gly Gln Ser Lys Arg Val  
 130 135 140  
 Asp Phe Cys Gly Lys Gly Tyr His Leu Met Ser Phe Pro Gln Ala Ala  
 145 150 155 160  
 Pro His Gly Val Val Phe Leu His Val Thr Tyr Val Pro Ser Gln Glu  
 165 170 175  
 Arg Asn Phe Thr Thr Ala Pro Ala Ile Cys His Glu Gly Lys Ala Tyr  
 180 185 190  
 Phe Pro Arg Glu Gly Val Phe Val Phe Asn Gly Thr Ser Trp Phe Ile  
 195 200 205  
 Thr Gln Arg Asn Phe Phe Ser Pro Gln Ile Ile Thr Thr Asp Asn Thr  
 210 215 220  
 Phe Val Ser Gly Asn Cys Asp Val Val Ile Gly Ile Ile Asn Asn Thr  
 225 230 235 240  
 Val Tyr Asp Pro Leu Gln Pro Glu Leu Asp Ser Phe Lys Glu Glu Leu  
 245 250 255  
 Asp Lys Tyr Phe Lys Asn His Thr Ser Pro Asp Val Asp Phe Gly Asp  
 260 265 270  
 Ile Ser Gly Ile Asn Ala Ser Val Val Asn Ile Gln Lys Glu Ile Asp  
 275 280 285  
 Arg Leu Asn Glu Val Ala Lys Asn Leu Asn Glu Ser Leu Ile Asp Leu  
 290 295 300  
 Gln Glu Leu Gly Lys Tyr Glu Gln Tyr Ile Lys Trp Pro Gly Gly Gly  
 305 310 315 320  
 Gly Ser Gly Lys Val Val Thr Asn Leu Thr Lys Thr Val Asn Glu Asn  
 325 330 335  
 Lys Gln Asn Val Asp Ala Lys Val Lys Ala Ala Glu Ser Glu Ile Glu  
 340 345 350  
 Lys Leu Thr Thr Lys Leu Ala Asp Thr Asp Ala Ala Leu Ala Asp Thr  
 355 360 365  
 Asp Ala Ala Leu Asp Ala Thr Thr Asn Ala Leu Asn Lys Leu Gly Glu  
 370 375 380  
 Asn Ile Thr Thr Phe Ala Glu Glu Thr Lys Thr Asn Ile Val Lys Ile  
 385 390 395 400  
 Asp Glu Lys Leu Glu Ala Val Ala Asp Thr Val Asp Lys His Ala Glu  
 405 410 415  
 Ala Phe Asn Asp Ile Ala Asp Ser Leu Asp Glu Thr Asn Thr Lys Ala  
 420 425 430  
 Asp Glu Ala Val Lys Thr Ala Asn Glu Ala Lys Gln Thr Ala Glu Glu  
 435 440 445

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Thr Lys Gln Asn Val Asp Ala Lys Val Lys Ala Ala Glu Thr Ala Ala  
450 455 460  
Gly Lys Ala Glu Ala Ala Ala Gly Thr Ala Asn Thr Ala Ala Asp Lys  
465 470 475 480  
Ala Glu Ala Val Ala Ala Lys Val Thr Asp Ile Lys Ala Asp Ile Ala  
485 490 495  
Thr Asn Lys Asp Asn Ile Ala Lys Lys Ala Asn Ser Ala Asp Val Tyr  
500 505 510  
Thr Arg Glu Glu Ser Asp Ser Lys Phe Val Arg Ile Asp Gly Leu Asn  
515 520 525  
Ala Thr Thr Glu Lys Leu Asp Thr Arg Leu Ala Ser Ala Glu Lys Ser  
530 535 540  
Ile Ala Asp His Asp Thr Arg Leu Asn Gly Leu Asp Lys Thr Val Ser  
545 550 555 560  
Asp Leu Arg Lys Glu Thr Arg Gln Gly Leu Ala Glu Gln Ala Ala Leu  
565 570 575  
Ser Gly Leu Phe Gln Pro Tyr Asn Val Gly His His His His His His  
580 585 590

<210> 7205  
<211> 401  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Fusion polypeptide (SARS coronavirus & Neisseria meningitidis)

<400> 7205  
Met Lys His Phe Pro Ser Lys Val Leu Thr Thr Ala Ile Leu Ala Thr  
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Phe Cys Ser Gly Ala Leu Ala Ala Thr Asn Asp Asp Asp Pro Phe Ala  
20 25 30  
Met Gln Met Ala Tyr Arg Phe Asn Gly Ile Gly Val Thr Gln Asn Val  
35 40 45  
Leu Tyr Glu Asn Gln Lys Gln Ile Ala Asn Gln Phe Asn Lys Ala Ile  
50 55 60  
Ser Gln Ile Gln Glu Ser Leu Thr Thr Thr Ser Thr Ala Leu Gly Lys  
65 70 75 80  
Leu Gln Asp Val Val Asn Gln Asn Ala Gln Ala Leu Asn Thr Leu Val  
85 90 95  
Lys Gln Leu Ser Ser Asn Phe Gly Ala Ile Ser Ser Val Leu Asn Asp  
100 105 110  
Ile Leu Ser Arg Leu Asp Lys Val Glu Ala Glu Val Gln Ile Asp Arg  
115 120 125  
Leu Ile Thr Gly Arg Leu Gln Ser Leu Gln Thr Tyr Val Thr Gln Gln

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130          135          140
Leu Ile Arg Ala Ala Glu Ile Arg Ala Ser Ala Asn Leu Ala Ala Thr
145          150          155
Lys Met Ser Glu Cys Val Leu Gly Gln Ser Lys Arg Val Asp Phe Cys
          165          170          175
Gly Lys Gly Tyr His Leu Met Ser Phe Pro Gln Ala Ala Pro His Gly
          180          185          190
Val Val Phe Leu His Val Thr Tyr Val Pro Ser Gln Glu Arg Asn Phe
          195          200          205
Thr Thr Ala Pro Ala Ile Cys His Glu Gly Lys Ala Tyr Phe Pro Arg
          210          215          220
Glu Gly Val Phe Val Phe Asn Gly Thr Ser Trp Phe Ile Thr Gln Arg
          225          230          235
Asn Phe Phe Ser Pro Gln Ile Ile Thr Thr Asp Asn Thr Phe Val Ser
          245          250          255
Gly Asn Cys Asp Val Val Ile Gly Ile Ile Asn Asn Thr Val Tyr Asp
          260          265          270
Pro Leu Gln Pro Glu Leu Asp Ser Phe Lys Glu Glu Leu Asp Lys Tyr
          275          280          285
Phe Lys Asn His Thr Ser Pro Asp Val Asp Phe Gly Asp Ile Ser Gly
          290          295          300
Ile Asn Ala Ser Val Val Asn Ile Gln Lys Glu Ile Asp Arg Leu Asn
          305          310          315
Glu Val Ala Lys Asn Leu Asn Glu Ser Leu Ile Asp Leu Gln Glu Leu
          325          330          335
Gly Lys Tyr Glu Gln Tyr Ile Lys Trp Pro Arg Phe Asn Val Thr Ala
          340          345          350
Ala Val Gly Gly Tyr Lys Ser Glu Ser Ala Val Ala Ile Gly Thr Gly
          355          360          365
Phe Arg Phe Thr Glu Asn Phe Ala Ala Lys Ala Gly Val Ala Val Gly
          370          375          380
Thr Ser Ser Gly Ser Ser Ala Ala Tyr His Val Gly Val Asn Tyr Glu
          385          390          395          400

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Trp

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<210> 7206
<211> 346
<212> PRT
<213> Artificial Sequence

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<220>
<223> Fusion polypeptide (SARS coronavirus & Neisseria meningitidis)

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<400> 7206
Met Lys His Phe Pro Ser Lys Val Leu Thr Thr Ala Ile Leu Ala Thr

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Met	Gln	Met 35	Ala	Tyr	Arg	Phe	Asn 40	Gly	Ile	Gly	Val	Thr 45	Gln	Asn	Val	
Leu	Tyr 50	Glu	Asn	Gln	Lys	Gln 55	Ile	Ala	Asn	Gln	Phe 60	Asn	Lys	Ala	Ile	
Ser 65	Gln	Ile	Gln	Glu	Ser 70	Leu	Thr	Thr	Thr	Ser 75	Thr	Ala	Leu	Gly	Lys 80	
Leu	Gln	Asp	Val	Val 85	Asn	Gln	Asn	Ala	Gln 90	Ala	Leu	Asn	Thr	Leu 95	Val	
Lys	Gln	Leu	Ser 100	Ser	Asn	Phe	Gly	Ala 105	Ile	Ser	Ser	Val	Leu 110	Asn	Asp	
Ile	Leu	Ser 115	Arg	Leu	Asp	Lys	Val 120	Glu	Ala	Glu	Val	Gln 125	Ile	Asp	Arg	
Leu	Ile 130	Thr	Gly	Arg	Leu	Gln 135	Ser	Leu	Gln	Thr	Tyr 140	Val	Thr	Gln	Gln	
Leu 145	Ile	Arg	Ala	Ala	Glu 150	Ile	Arg	Ala	Ser	Ala 155	Asn	Leu	Ala	Ala	Thr 160	
Lys	Met	Ser	Glu	Cys 165	Val	Leu	Gly	Gln	Ser 170	Lys	Arg	Val	Asp	Phe 175	Cys	
Gly	Lys	Gly	Tyr 180	His	Leu	Met	Ser	Phe 185	Pro	Gln	Ala	Ala	Pro 190	His	Gly	
Val	Val	Phe 195	Leu	His	Val	Thr	Tyr 200	Val	Pro	Ser	Gln	Glu 205	Arg	Asn	Phe	
Thr	Thr 210	Ala	Pro	Ala	Ile	Cys 215	His	Glu	Gly	Lys	Ala 220	Tyr	Phe	Pro	Arg	
Glu 225	Gly	Val	Phe	Val	Phe 230	Asn	Gly	Thr	Ser	Trp 235	Phe	Ile	Thr	Gln	Arg 240	
Asn	Phe	Phe	Ser	Pro 245	Gln	Ile	Ile	Thr	Thr 250	Asp	Asn	Thr	Phe	Val 255	Ser	
Gly	Asn	Cys	Asp 260	Val	Val	Ile	Gly	Ile 265	Ile	Asn	Asn	Thr	Val 270	Tyr	Asp	
Pro	Leu	Gln 275	Pro	Glu	Leu	Asp	Ser 280	Phe	Lys	Glu	Glu	Leu 285	Asp	Lys	Tyr	
Phe	Lys 290	Asn	His	Thr	Ser	Pro 295	Asp	Val	Asp	Phe	Gly 300	Asp	Ile	Ser	Gly	
Ile 305	Asn	Ala	Ser	Val	Val 310	Asn	Ile	Gln	Lys	Glu 315	Ile	Asp	Arg	Leu	Asn 320	
Glu	Val	Ala	Lys	Asn 325	Leu	Asn	Glu	Ser	Leu 330	Ile	Asp	Leu	Gln	Glu 335	Leu	
Gly	Lys	Tyr	Glu	Gln	Tyr	Ile	Lys	Trp	Pro							

340

<210> 7207  
<211> 4  
<212> PRT  
<213> SARS coronavirus

<400> 7207  
Asn Tyr Thr Gln  
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<210> 7208  
<211> 4  
<212> PRT  
<213> SARS coronavirus

<400> 7208  
Asn Val Thr Gly  
1

<210> 7209  
<211> 4  
<212> PRT  
<213> SARS coronavirus

<400> 7209  
Asn Lys Ser Gln  
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<210> 7210  
<211> 4  
<212> PRT  
<213> SARS coronavirus

<400> 7210  
Asn Ser Thr Asn  
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<210> 7211  
<211> 4  
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<213> SARS coronavirus

<400> 7211  
Asn Cys Thr Phe  
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<210> 7212  
<211> 4  
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<213> SARS coronavirus

<400> 7212  
Asn Ile Thr Asn  
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<210> 7213  
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<213> SARS coronavirus

<400> 7213  
Asn Gly Thr Ile



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<210> 7214  
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 <212> PRT  
 <213> SARS coronavirus

<400> 7214  
 Asn Ile Thr Asn  
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<210> 7215  
 <211> 4  
 <212> PRT  
 <213> SARS coronavirus

<400> 7215  
 Asn Ala Thr Lys  
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<210> 7216  
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 <213> SARS coronavirus

<400> 7216  
 Asn Ser Thr Phe  
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<210> 7217  
 <211> 4  
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 <213> SARS coronavirus

<400> 7217  
 Asn Ala Ser Ser  
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<210> 7218  
 <211> 4  
 <212> PRT  
 <213> SARS coronavirus

<400> 7218  
 Asn Cys Thr Asp  
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<210> 7219  
 <211> 4  
 <212> PRT  
 <213> SARS coronavirus

<400> 7219  
 Asn Phe Ser Ile  
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<210> 7220  
 <211> 4  
 <212> PRT  
 <213> SARS coronavirus

<400> 7220  
 Asn Phe Ser Gln

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1

<210> 7221  
<211> 4  
<212> PRT  
<213> SARS coronavirus

<400> 7221  
Asn Gly Thr Ser  
1

<210> 7222  
<211> 4  
<212> PRT  
<213> SARS coronavirus

<400> 7222  
Asn Asn Thr Val  
1

<210> 7223  
<211> 4  
<212> PRT  
<213> SARS coronavirus

<400> 7223  
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<210> 7224  
<211> 178  
<212> DNA  
<213> SARS coronavirus

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tagttgtgac caactccgcg aacccttgat gcagtctgcg gatgcatcaa cgtttttaaa 120  
cgggttttgcg gtgtaagtgc agcccgtctt acaccgtgcg gcacaggcac tagtactg 178

<210> 7225  
<211> 44  
<212> PRT  
<213> SARS coronavirus

<400> 7225  
Gly Phe Thr Leu Arg Asn Thr Val Cys Thr Val Cys Gly Met Trp Lys  
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Gly Tyr Gly Cys Ser Cys Asp Gln Leu Arg Glu Pro Leu Met Gln Ser  
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Ala Asp Ala Ser Thr Phe Leu Asn Gly Phe Ala Val  
35 40

<210> 7226  
<211> 14  
<212> PRT  
<213> SARS coronavirus

<400> 7226  
Val Gln Pro Val Leu His Arg Ala Ala Gln Ala Leu Val Leu  
1 5 10

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<210> 7227  
 <211> 4  
 <212> PRT  
 <213> SARS coronavirus

<400> 7227  
 Gly Phe Tyr Thr  
 1

<210> 7228  
 <211> 15  
 <212> PRT  
 <213> SARS coronavirus

<400> 7228  
 Lys His Ser Leu Tyr Arg Leu Arg Asn Val Glu Arg Leu Trp Leu  
 1 5 10 15

<210> 7229  
 <211> 36  
 <212> PRT  
 <213> SARS coronavirus

<400> 7229  
 Pro Thr Pro Arg Thr Leu Asp Ala Val Cys Gly Cys Ile Asn Val Phe  
 1 5 10 15

Lys Arg Val Cys Gly Val Ser Ala Ala Arg Leu Thr Pro Cys Gly Thr  
 20 25 30

Gly Thr Ser Thr  
 35

<210> 7230  
 <211> 69  
 <212> DNA  
 <213> SARS coronavirus

<400> 7230  
 ccaactccgc gaacccttga tgcagtctgc ggatgcatca acgtttttaa acggggtttgc 60  
 ggtgtaagt 69

<210> 7231  
 <211> 23  
 <212> PRT  
 <213> SARS coronavirus

<400> 7231  
 Gln Leu Arg Glu Pro Leu Met Gln Ser Ala Asp Ala Ser Thr Phe Leu  
 1 5 10 15

Asn Arg Val Cys Gly Val Ser  
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<210> 7232  
 <211> 7073  
 <212> PRT  
 <213> SARS coronavirus

<400> 7232  
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SEQLIST-20480.TXT

Ser Leu Pro Val<sub>20</sub> Leu Gln Val Arg Asp<sub>25</sub> Val Leu Val Arg Gly<sub>30</sub> Phe Gly  
 Asp Ser Val<sub>35</sub> Glu Glu Ala Leu Ser<sub>40</sub> Glu Ala Arg Glu His<sub>45</sub> Leu Lys Asn  
 Gly Thr<sub>50</sub> Cys Gly Leu Val Glu<sub>55</sub> Leu Glu Lys Gly Val<sub>60</sub> Leu Pro Gln Leu  
 Glu Gln Pro Tyr Val Phe<sub>70</sub> Ile Lys Arg Ser Asp<sub>75</sub> Ala Leu Ser Thr Asn<sub>80</sub>  
 His Gly His Lys Val<sub>85</sub> Val Glu Leu Val Ala<sub>90</sub> Glu Met Asp Gly Ile<sub>95</sub> Gln  
 Tyr Gly Arg Ser<sub>100</sub> Gly Ile Thr Leu Gly<sub>105</sub> Val Leu Val Pro His<sub>110</sub> Val Gly  
 Glu Thr Pro<sub>115</sub> Ile Ala Tyr Arg Asn<sub>120</sub> Val Leu Leu Arg Lys<sub>125</sub> Asn Gly Asn  
 Lys Gly<sub>130</sub> Ala Gly Gly His Ser<sub>135</sub> Tyr Gly Ile Asp Leu<sub>140</sub> Lys Ser Tyr Asp  
 Leu<sub>145</sub> Gly Asp Glu Leu Gly<sub>150</sub> Thr Asp Pro Ile Glu<sub>155</sub> Asp Tyr Glu Gln Asn<sub>160</sub>  
 Trp Asn Thr Lys His<sub>165</sub> Gly Ser Gly Ala Leu<sub>170</sub> Arg Glu Leu Thr Arg<sub>175</sub> Glu  
 Leu Asn Gly Gly<sub>180</sub> Ala Val Thr Arg Tyr<sub>185</sub> Val Asp Asn Asn Phe<sub>190</sub> Cys Gly  
 Pro Asp Gly<sub>195</sub> Tyr Pro Leu Asp Cys<sub>200</sub> Ile Lys Asp Phe Leu<sub>205</sub> Ala Arg Ala  
 Gly Lys<sub>210</sub> Ser Met Cys Thr Leu<sub>215</sub> Ser Glu Gln Leu Asp<sub>220</sub> Tyr Ile Glu Ser  
 Lys<sub>225</sub> Arg Gly Val Tyr Cys<sub>230</sub> Cys Arg Asp His Glu<sub>235</sub> His Glu Ile Ala Trp<sub>240</sub>  
 Phe Thr Glu Arg Ser<sub>245</sub> Asp Lys Ser Tyr Glu<sub>250</sub> His Gln Thr Pro Phe<sub>255</sub> Glu  
 Ile Lys Ser Ala<sub>260</sub> Lys Lys Phe Asp Thr<sub>265</sub> Phe Lys Gly Glu Cys<sub>270</sub> Pro Lys  
 Phe Val Phe<sub>275</sub> Pro Leu Asn Ser Lys<sub>280</sub> Val Lys Val Ile Gln<sub>285</sub> Pro Arg Val  
 Glu Lys<sub>290</sub> Lys Lys Thr Glu Gly<sub>295</sub> Phe Met Gly Arg Ile<sub>300</sub> Arg Ser Val Tyr  
 Pro<sub>305</sub> Val Ala Ser Pro Gln<sub>310</sub> Glu Cys Asn Asn Met<sub>315</sub> His Leu Ser Thr Leu<sub>320</sub>  
 Met Lys Cys Asn His<sub>325</sub> Cys Asp Glu Val Ser<sub>330</sub> Trp Gln Thr Cys Asp<sub>335</sub> Phe  
 Leu Lys Ala Thr<sub>340</sub> Cys Glu His Cys Gly<sub>345</sub> Thr Glu Asn Leu Val<sub>350</sub> Ile Glu

SEQLIST-20480.TXT

Gly Pro Thr Thr Cys Gly Tyr Leu Pro Thr Asn Ala Val Val Lys Met  
355 360 365

Pro Cys Pro Ala Cys Gln Asp Pro Glu Ile Gly Pro Glu His Ser Val  
370 375 380

Ala Asp Tyr His Asn His Ser Asn Ile Glu Thr Arg Leu Arg Lys Gly  
385 390 395 400

Gly Arg Thr Arg Cys Phe Gly Gly Cys Val Phe Ala Tyr Val Gly Cys  
405 410 415

Tyr Asn Lys Arg Ala Tyr Trp Val Pro Arg Ala Ser Ala Asp Ile Gly  
420 425 430

Ser Gly His Thr Gly Ile Thr Gly Asp Asn Val Glu Thr Leu Asn Glu  
435 440 445

Asp Leu Leu Glu Ile Leu Ser Arg Glu Arg Val Asn Ile Asn Ile Val  
450 455 460

Gly Asp Phe His Leu Asn Glu Glu Val Ala Ile Ile Leu Ala Ser Phe  
465 470 475 480

Ser Ala Ser Thr Ser Ala Phe Ile Asp Thr Ile Lys Ser Leu Asp Tyr  
485 490 495

Lys Ser Phe Lys Thr Ile Val Glu Ser Cys Gly Asn Tyr Lys Val Thr  
500 505 510

Lys Gly Lys Pro Val Lys Gly Ala Trp Asn Ile Gly Gln Gln Arg Ser  
515 520 525

Val Leu Thr Pro Leu Cys Gly Phe Pro Ser Gln Ala Ala Gly Val Ile  
530 535 540

Arg Ser Ile Phe Ala Arg Thr Leu Asp Ala Ala Asn His Ser Ile Pro  
545 550 555 560

Asp Leu Gln Arg Ala Ala Val Thr Ile Leu Asp Gly Ile Ser Glu Gln  
565 570 575

Ser Leu Arg Leu Val Asp Ala Met Val Tyr Thr Ser Asp Leu Leu Thr  
580 585 590

Asn Ser Val Ile Ile Met Ala Tyr Val Thr Gly Gly Leu Val Gln Gln  
595 600 605

Thr Ser Gln Trp Leu Ser Asn Leu Leu Gly Thr Thr Val Glu Lys Leu  
610 615 620

Arg Pro Ile Phe Glu Trp Ile Glu Ala Lys Leu Ser Ala Gly Val Glu  
625 630 635 640

Phe Leu Lys Asp Ala Trp Glu Ile Leu Lys Phe Leu Ile Thr Gly Val  
645 650 655

Phe Asp Ile Val Lys Gly Gln Ile Gln Val Ala Ser Asp Asn Ile Lys  
660 665 670

Asp Cys Val Lys Cys Phe Ile Asp Val Val Asn Lys Ala Leu Glu Met  
675 680 685

SEQLIST-20480.TXT

Cys Ile Asp Gln Val Thr Ile Ala Gly Ala Lys Leu Arg Ser Leu Asn  
 690 695 700  
 Leu Gly Glu Val Phe Ile Ala Gln Ser Lys Gly Leu Tyr Arg Gln Cys  
 705 710 715 720  
 Ile Arg Gly Lys Glu Gln Leu Gln Leu Leu Met Pro Leu Lys Ala Pro  
 725 730 735  
 Lys Glu Val Thr Phe Leu Glu Gly Asp Ser His Asp Thr Val Leu Thr  
 740 745 750  
 Ser Glu Glu Val Val Leu Lys Asn Gly Glu Leu Glu Ala Leu Glu Thr  
 755 760 765  
 Pro Val Asp Ser Phe Thr Asn Gly Ala Ile Val Gly Thr Pro Val Cys  
 770 775 780  
 Val Asn Gly Leu Met Leu Leu Glu Ile Lys Asp Lys Glu Gln Tyr Cys  
 785 790 795 800  
 Ala Leu Ser Pro Gly Leu Leu Ala Thr Asn Asn Val Phe Arg Leu Lys  
 805 810 815  
 Gly Gly Ala Pro Ile Lys Gly Val Thr Phe Gly Glu Asp Thr Val Trp  
 820 825 830  
 Glu Val Gln Gly Tyr Lys Asn Val Arg Ile Thr Phe Glu Leu Asp Glu  
 835 840 845  
 Arg Val Asp Lys Val Leu Asn Glu Lys Cys Ser Val Tyr Thr Val Glu  
 850 855 860  
 Ser Gly Thr Glu Val Thr Glu Phe Ala Cys Val Val Ala Glu Ala Val  
 865 870 875 880  
 Val Lys Thr Leu Gln Pro Val Ser Asp Leu Leu Thr Asn Met Gly Ile  
 885 890 895  
 Asp Leu Asp Glu Trp Ser Val Ala Thr Phe Tyr Leu Phe Asp Asp Ala  
 900 905 910  
 Gly Glu Glu Asn Phe Ser Ser Arg Met Tyr Cys Ser Phe Tyr Pro Pro  
 915 920 925  
 Asp Glu Glu Glu Glu Asp Asp Ala Glu Cys Glu Glu Glu Glu Ile Asp  
 930 935 940  
 Glu Thr Cys Glu His Glu Tyr Gly Thr Glu Asp Asp Tyr Gln Gly Leu  
 945 950 955 960  
 Pro Leu Glu Phe Gly Ala Ser Ala Glu Thr Val Arg Val Glu Glu Glu  
 965 970 975  
 Glu Glu Glu Asp Trp Leu Asp Asp Thr Thr Glu Gln Ser Glu Ile Glu  
 980 985 990  
 Pro Glu Pro Glu Pro Thr Pro Glu Glu Pro Val Asn Gln Phe Thr Gly  
 995 1000 1005  
 Tyr Leu Lys Leu Thr Asp Asn Val Ala Ile Lys Cys Val Asp Ile Val  
 1010 1015 1020

SEQLIST-20480.TXT

Lys Glu Ala Gln Ser Ala Asn Pro Met Val Ile Val Asn Ala Ala Asn  
 1025 1030 1035 1040  
 Ile His Leu Lys His Gly Gly Gly Val Ala Gly Ala Leu Asn Lys Ala  
 1045 1050 1055  
 Thr Asn Gly Ala Met Gln Lys Glu Ser Asp Asp Tyr Ile Lys Leu Asn  
 1060 1065 1070  
 Gly Pro Leu Thr Val Gly Gly Ser Cys Leu Leu Ser Gly His Asn Leu  
 1075 1080 1085  
 Ala Lys Lys Cys Leu His Val Val Gly Pro Asn Leu Asn Ala Gly Glu  
 1090 1095 1100  
 Asp Ile Gln Leu Leu Lys Ala Ala Tyr Glu Asn Phe Asn Ser Gln Asp  
 1105 1110 1115 1120  
 Ile Leu Leu Ala Pro Leu Leu Ser Ala Gly Ile Phe Gly Ala Lys Pro  
 1125 1130 1135  
 Leu Gln Ser Leu Gln Val Cys Val Gln Thr Val Arg Thr Gln Val Tyr  
 1140 1145 1150  
 Ile Ala Val Asn Asp Lys Ala Leu Tyr Glu Gln Val Val Met Asp Tyr  
 1155 1160 1165  
 Leu Asp Asn Leu Lys Pro Arg Val Glu Ala Pro Lys Gln Glu Glu Pro  
 1170 1175 1180  
 Pro Asn Thr Glu Asp Ser Lys Thr Glu Glu Lys Ser Val Val Gln Lys  
 1185 1190 1195 1200  
 Pro Val Asp Val Lys Pro Lys Ile Lys Ala Cys Ile Asp Glu Val Thr  
 1205 1210 1215  
 Thr Thr Leu Glu Glu Thr Lys Phe Leu Thr Asn Lys Leu Leu Leu Phe  
 1220 1225 1230  
 Ala Asp Ile Asn Gly Lys Leu Tyr His Asp Ser Gln Asn Met Leu Arg  
 1235 1240 1245  
 Gly Glu Asp Met Ser Phe Leu Glu Lys Asp Ala Pro Tyr Met Val Gly  
 1250 1255 1260  
 Asp Val Ile Thr Ser Gly Asp Ile Thr Cys Val Val Ile Pro Ser Lys  
 1265 1270 1275 1280  
 Lys Ala Gly Gly Thr Thr Glu Met Leu Ser Arg Ala Leu Lys Lys Val  
 1285 1290 1295  
 Pro Val Asp Glu Tyr Ile Thr Thr Tyr Pro Gly Gln Gly Cys Ala Gly  
 1300 1305 1310  
 Tyr Thr Leu Glu Glu Ala Lys Thr Ala Leu Lys Lys Cys Lys Ser Ala  
 1315 1320 1325  
 Phe Tyr Val Leu Pro Ser Glu Ala Pro Asn Ala Lys Glu Glu Ile Leu  
 1330 1335 1340  
 Gly Thr Val Ser Trp Asn Leu Arg Glu Met Leu Ala His Ala Glu Glu  
 1345 1350 1355 1360

SEQLIST-20480.TXT

Thr Arg Lys Leu Met Pro Ile Cys Met Asp Val Arg Ala Ile Met Ala  
1365 1370 1375

Thr Ile Gln Arg Lys Tyr Lys Gly Ile Lys Ile Gln Glu Gly Ile Val  
1380 1385 1390

Asp Tyr Gly Val Arg Phe Phe Phe Tyr Thr Ser Lys Glu Pro Val Ala  
1395 1400 1405

Ser Ile Ile Thr Lys Leu Asn Ser Leu Asn Glu Pro Leu Val Thr Met  
1410 1415 1420

Pro Ile Gly Tyr Val Thr His Gly Phe Asn Leu Glu Glu Ala Ala Arg  
1425 1430 1435 1440

Cys Met Arg Ser Leu Lys Ala Pro Ala Val Val Ser Val Ser Ser Pro  
1445 1450 1455

Asp Ala Val Thr Thr Tyr Asn Gly Tyr Leu Thr Ser Ser Ser Lys Thr  
1460 1465 1470

Ser Glu Glu His Phe Val Glu Thr Val Ser Leu Ala Gly Ser Tyr Arg  
1475 1480 1485

Asp Trp Ser Tyr Ser Gly Gln Arg Thr Glu Leu Gly Val Glu Phe Leu  
1490 1495 1500

Lys Arg Gly Asp Lys Ile Val Tyr His Thr Leu Glu Ser Pro Val Glu  
1505 1510 1515 1520

Phe His Leu Asp Gly Glu Val Leu Ser Leu Asp Lys Leu Lys Ser Leu  
1525 1530 1535

Leu Ser Leu Arg Glu Val Lys Thr Ile Lys Val Phe Thr Thr Val Asp  
1540 1545 1550

Asn Thr Asn Leu His Thr Gln Leu Val Asp Met Ser Met Thr Tyr Gly  
1555 1560 1565

Gln Gln Phe Gly Pro Thr Tyr Leu Asp Gly Ala Asp Val Thr Lys Ile  
1570 1575 1580

Lys Pro His Val Asn His Glu Gly Lys Thr Phe Phe Val Leu Pro Ser  
1585 1590 1595 1600

Asp Asp Thr Leu Arg Ser Glu Ala Phe Glu Tyr Tyr His Thr Leu Asp  
1605 1610 1615

Glu Ser Phe Leu Gly Arg Tyr Met Ser Ala Leu Asn His Thr Lys Lys  
1620 1625 1630

Trp Lys Phe Pro Gln Val Gly Gly Leu Thr Ser Ile Lys Trp Ala Asp  
1635 1640 1645

Asn Asn Cys Tyr Leu Ser Ser Val Leu Leu Ala Leu Gln Gln Leu Glu  
1650 1655 1660

Val Lys Phe Asn Ala Pro Ala Leu Gln Glu Ala Tyr Tyr Arg Ala Arg  
1665 1670 1675 1680

Ala Gly Asp Ala Ala Asn Phe Cys Ala Leu Ile Leu Ala Tyr Ser Asn  
1685 1690 1695



SEQLIST-20480.TXT

Lys Thr Val Gly Glu Leu Gly Asp Val Arg Glu Thr Met Thr His Leu  
1700 1705 1710

Leu Gln His Ala Asn Leu Glu Ser Ala Lys Arg Val Leu Asn Val Val  
1715 1720 1725

Cys Lys His Cys Gly Gln Lys Thr Thr Thr Leu Thr Gly Val Glu Ala  
1730 1735 1740

Val Met Tyr Met Gly Thr Leu Ser Tyr Asp Asn Leu Lys Thr Gly Val  
1745 1750 1755 1760

Ser Ile Pro Cys Val Cys Gly Arg Asp Ala Thr Gln Tyr Leu Val Gln  
1765 1770 1775

Gln Glu Ser Ser Phe Val Met Met Ser Ala Pro Pro Ala Glu Tyr Lys  
1780 1785 1790

Leu Gln Gln Gly Thr Phe Leu Cys Ala Asn Glu Tyr Thr Gly Asn Tyr  
1795 1800 1805

Gln Cys Gly His Tyr Thr His Ile Thr Ala Lys Glu Thr Leu Tyr Arg  
1810 1815 1820

Ile Asp Gly Ala His Leu Thr Lys Met Ser Glu Tyr Lys Gly Pro Val  
1825 1830 1835 1840

Thr Asp Val Phe Tyr Lys Glu Thr Ser Tyr Thr Thr Thr Ile Lys Pro  
1845 1850 1855

Val Ser Tyr Lys Leu Asp Gly Val Thr Tyr Thr Glu Ile Glu Pro Lys  
1860 1865 1870

Leu Asp Gly Tyr Tyr Lys Lys Asp Asn Ala Tyr Tyr Thr Glu Gln Pro  
1875 1880 1885

Ile Asp Leu Val Pro Thr Gln Pro Leu Pro Asn Ala Ser Phe Asp Asn  
1890 1895 1900

Phe Lys Leu Thr Cys Ser Asn Thr Lys Phe Ala Asp Asp Leu Asn Gln  
1905 1910 1915 1920

Met Thr Gly Phe Thr Lys Pro Ala Ser Arg Glu Leu Ser Val Thr Phe  
1925 1930 1935

Phe Pro Asp Leu Asn Gly Asp Val Val Ala Ile Asp Tyr Arg His Tyr  
1940 1945 1950

Ser Ala Ser Phe Lys Lys Gly Ala Lys Leu Leu His Lys Pro Ile Val  
1955 1960 1965

Trp His Ile Asn Gln Ala Thr Thr Lys Thr Thr Phe Lys Pro Asn Thr  
1970 1975 1980

Trp Cys Leu Arg Cys Leu Trp Ser Thr Lys Pro Val Asp Thr Ser Asn  
1985 1990 1995 2000

Ser Phe Glu Val Leu Ala Val Glu Asp Thr Gln Gly Met Asp Asn Leu  
2005 2010 2015

Ala Cys Glu Ser Gln Gln Pro Thr Ser Glu Glu Val Val Glu Asn Pro  
2020 2025 2030

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Thr Ile Gln Lys Glu Val Ile Glu Cys Asp Val Lys Thr Thr Glu Val  
2035 2040 2045  
Val Gly Asn Val Ile Leu Lys Pro Ser Asp Glu Gly Val Lys Val Thr  
2050 2055 2060  
Gln Glu Leu Gly His Glu Asp Leu Met Ala Ala Tyr Val Glu Asn Thr  
2065 2070 2075 2080  
Ser Ile Thr Ile Lys Lys Pro Asn Glu Leu Ser Leu Ala Leu Gly Leu  
2085 2090 2095  
Lys Thr Ile Ala Thr His Gly Ile Ala Ala Ile Asn Ser Val Pro Trp  
2100 2105 2110  
Ser Lys Ile Leu Ala Tyr Val Lys Pro Phe Leu Gly Gln Ala Ala Ile  
2115 2120 2125  
Thr Thr Ser Asn Cys Ala Lys Arg Leu Ala Gln Arg Val Phe Asn Asn  
2130 2135 2140  
Tyr Met Pro Tyr Val Phe Thr Leu Leu Phe Gln Leu Cys Thr Phe Thr  
2145 2150 2155 2160  
Lys Ser Thr Asn Ser Arg Ile Arg Ala Ser Leu Pro Thr Thr Ile Ala  
2165 2170 2175  
Lys Asn Ser Val Lys Ser Val Ala Lys Leu Cys Leu Asp Ala Gly Ile  
2180 2185 2190  
Asn Tyr Val Lys Ser Pro Lys Phe Ser Lys Leu Phe Thr Ile Ala Met  
2195 2200 2205  
Trp Leu Leu Leu Leu Ser Ile Cys Leu Gly Ser Leu Ile Cys Val Thr  
2210 2215 2220  
Ala Ala Phe Gly Val Leu Leu Ser Asn Phe Gly Ala Pro Ser Tyr Cys  
2225 2230 2235 2240  
Asn Gly Val Arg Glu Leu Tyr Leu Asn Ser Ser Asn Val Thr Thr Met  
2245 2250 2255  
Asp Phe Cys Glu Gly Ser Phe Pro Cys Ser Ile Cys Leu Ser Gly Leu  
2260 2265 2270  
Asp Ser Leu Asp Ser Tyr Pro Ala Leu Glu Thr Ile Gln Val Thr Ile  
2275 2280 2285  
Ser Ser Tyr Lys Leu Asp Leu Thr Ile Leu Gly Leu Ala Ala Glu Trp  
2290 2295 2300  
Val Leu Ala Tyr Met Leu Phe Thr Lys Phe Phe Tyr Leu Leu Gly Leu  
2305 2310 2315 2320  
Ser Ala Ile Met Gln Val Phe Phe Gly Tyr Phe Ala Ser His Phe Ile  
2325 2330 2335  
Ser Asn Ser Trp Leu Met Trp Phe Ile Ile Ser Ile Val Gln Met Ala  
2340 2345 2350  
Pro Val Ser Ala Met Val Arg Met Tyr Ile Phe Phe Ala Ser Phe Tyr  
2355 2360 2365

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Tyr Ile Trp Lys Ser Tyr Val His Ile Met Asp Gly Cys Thr Ser Ser  
 2370 2375 2380  
 Thr Cys Met Met Cys Tyr Lys Arg Asn Arg Ala Thr Arg Val Glu Cys  
 2385 2390 2395 2400  
 Thr Thr Ile Val Asn Gly Met Lys Arg Ser Phe Tyr Val Tyr Ala Asn  
 2405 2410 2415  
 Gly Gly Arg Gly Phe Cys Lys Thr His Asn Trp Asn Cys Leu Asn Cys  
 2420 2425 2430  
 Asp Thr Phe Cys Thr Gly Ser Thr Phe Ile Ser Asp Glu Val Ala Arg  
 2435 2440 2445  
 Asp Leu Ser Leu Gln Phe Lys Arg Pro Ile Asn Pro Thr Asp Gln Ser  
 2450 2455 2460  
 Ser Tyr Ile Val Asp Ser Val Ala Val Lys Asn Gly Ala Leu His Leu  
 2465 2470 2475 2480  
 Tyr Phe Asp Lys Ala Gly Gln Lys Thr Tyr Glu Arg His Pro Leu Ser  
 2485 2490 2495  
 His Phe Val Asn Leu Asp Asn Leu Arg Ala Asn Asn Thr Lys Gly Ser  
 2500 2505 2510  
 Leu Pro Ile Asn Val Ile Val Phe Asp Gly Lys Ser Lys Cys Asp Glu  
 2515 2520 2525  
 Ser Ala Ser Lys Ser Ala Ser Val Tyr Tyr Ser Gln Leu Met Cys Gln  
 2530 2535 2540  
 Pro Ile Leu Leu Leu Asp Gln Ala Leu Val Ser Asp Val Gly Asp Ser  
 2545 2550 2555 2560  
 Thr Glu Val Ser Val Lys Met Phe Asp Ala Tyr Val Asp Thr Phe Ser  
 2565 2570 2575  
 Ala Thr Phe Ser Val Pro Met Glu Lys Leu Lys Ala Leu Val Ala Thr  
 2580 2585 2590  
 Ala His Ser Glu Leu Ala Lys Gly Val Ala Leu Asp Gly Val Leu Ser  
 2595 2600 2605  
 Thr Phe Val Ser Ala Ala Arg Gln Gly Val Val Asp Thr Asp Val Asp  
 2610 2615 2620  
 Thr Lys Asp Val Ile Glu Cys Leu Lys Leu Ser His His Ser Asp Leu  
 2625 2630 2635 2640  
 Glu Val Thr Gly Asp Ser Cys Asn Asn Phe Met Leu Thr Tyr Asn Lys  
 2645 2650 2655  
 Val Glu Asn Met Thr Pro Arg Asp Leu Gly Ala Cys Ile Asp Cys Asn  
 2660 2665 2670  
 Ala Arg His Ile Asn Ala Gln Val Ala Lys Ser His Asn Val Ser Leu  
 2675 2680 2685  
 Ile Trp Asn Val Lys Asp Tyr Met Ser Leu Ser Glu Gln Leu Arg Lys  
 2690 2695 2700

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Gln Ile Arg Ser Ala Ala Lys Lys Asn Asn Ile Pro Phe Arg Leu Thr  
2705 2710 2715 2720

Cys Ala Thr Thr Arg Gln Val Val Asn Val Ile Thr Thr Lys Ile Ser  
2725 2730 2735

Leu Lys Gly Gly Lys Ile Val Ser Thr Cys Phe Lys Leu Met Leu Lys  
2740 2745 2750

Ala Thr Leu Leu Cys Val Leu Ala Ala Leu Val Cys Tyr Ile Val Met  
2755 2760 2765

Pro Val His Thr Leu Ser Ile His Asp Gly Tyr Thr Asn Glu Ile Ile  
2770 2775 2780

Gly Tyr Lys Ala Ile Gln Asp Gly Val Thr Arg Asp Ile Ile Ser Thr  
2785 2790 2795 2800

Asp Asp Cys Phe Ala Asn Lys His Ala Gly Phe Asp Ala Trp Phe Ser  
2805 2810 2815

Gln Arg Gly Gly Ser Tyr Lys Asn Asp Lys Ser Cys Pro Val Val Ala  
2820 2825 2830

Ala Ile Ile Thr Arg Glu Ile Gly Phe Ile Val Pro Gly Leu Pro Gly  
2835 2840 2845

Thr Val Leu Arg Ala Ile Asn Gly Asp Phe Leu His Phe Leu Pro Arg  
2850 2855 2860

Val Phe Ser Ala Val Gly Asn Ile Cys Tyr Thr Pro Ser Lys Leu Ile  
2865 2870 2875 2880

Glu Tyr Ser Asp Phe Ala Thr Ser Ala Cys Val Leu Ala Ala Glu Cys  
2885 2890 2895

Thr Ile Phe Lys Asp Ala Met Gly Lys Pro Val Pro Tyr Cys Tyr Asp  
2900 2905 2910

Thr Asn Leu Leu Glu Gly Ser Ile Ser Tyr Ser Glu Leu Arg Pro Asp  
2915 2920 2925

Thr Arg Tyr Val Leu Met Asp Gly Ser Ile Ile Gln Phe Pro Asn Thr  
2930 2935 2940

Tyr Leu Glu Gly Ser Val Arg Val Val Thr Thr Phe Asp Ala Glu Tyr  
2945 2950 2955 2960

Cys Arg His Gly Thr Cys Glu Arg Ser Glu Val Gly Ile Cys Leu Ser  
2965 2970 2975

Thr Ser Gly Arg Trp Val Leu Asn Asn Glu His Tyr Arg Ala Leu Ser  
2980 2985 2990

Gly Val Phe Cys Gly Val Asp Ala Met Asn Leu Ile Ala Asn Ile Phe  
2995 3000 3005

Thr Pro Leu Val Gln Pro Val Gly Ala Leu Asp Val Ser Ala Ser Val  
3010 3015 3020

Val Ala Gly Gly Ile Ile Ala Ile Leu Val Thr Cys Ala Ala Tyr Tyr  
3025 3030 3035 3040

SEQLIST-20480.TXT

Phe Met Lys Phe Arg Arg Val Phe Gly Glu Tyr Asn His Val Val Ala  
3045 3050 3055

Ala Asn Ala Leu Leu Phe Leu Met Ser Phe Thr Ile Leu Cys Leu Val  
3060 3065 3070

Pro Ala Tyr Ser Phe Leu Pro Gly Val Tyr Ser Val Phe Tyr Leu Tyr  
3075 3080 3085

Leu Thr Phe Tyr Phe Thr Asn Asp Val Ser Phe Leu Ala His Leu Gln  
3090 3095 3100

Trp Phe Ala Met Phe Ser Pro Ile Val Pro Phe Trp Ile Thr Ala Ile  
3105 3110 3115 3120

Tyr Val Phe Cys Ile Ser Leu Lys His Cys His Trp Phe Phe Asn Asn  
3125 3130 3135

Tyr Leu Arg Lys Arg Val Met Phe Asn Gly Val Thr Phe Ser Thr Phe  
3140 3145 3150

Glu Glu Ala Ala Leu Cys Thr Phe Leu Leu Asn Lys Glu Met Tyr Leu  
3155 3160 3165

Lys Leu Arg Ser Glu Thr Leu Leu Pro Leu Thr Gln Tyr Asn Arg Tyr  
3170 3175 3180

Leu Ala Leu Tyr Asn Lys Tyr Lys Tyr Phe Ser Gly Ala Leu Asp Thr  
3185 3190 3195 3200

Thr Ser Tyr Arg Glu Ala Ala Cys Cys His Leu Ala Lys Ala Leu Asn  
3205 3210 3215

Asp Phe Ser Asn Ser Gly Ala Asp Val Leu Tyr Gln Pro Pro Gln Thr  
3220 3225 3230

Ser Ile Thr Ser Ala Val Leu Gln Ser Gly Phe Arg Lys Met Ala Phe  
3235 3240 3245

Pro Ser Gly Lys Val Glu Gly Cys Met Val Gln Val Thr Cys Gly Thr  
3250 3255 3260

Thr Thr Leu Asn Gly Leu Trp Leu Asp Asp Thr Val Tyr Cys Pro Arg  
3265 3270 3275 3280

His Val Ile Cys Thr Ala Glu Asp Met Leu Asn Pro Asn Tyr Glu Asp  
3285 3290 3295

Leu Leu Ile Arg Lys Ser Asn His Ser Phe Leu Val Gln Ala Gly Asn  
3300 3305 3310

Val Gln Leu Arg Val Ile Gly His Ser Met Gln Asn Cys Leu Leu Arg  
3315 3320 3325

Leu Lys Val Asp Thr Ser Asn Pro Lys Thr Pro Lys Tyr Lys Phe Val  
3330 3335 3340

Arg Ile Gln Pro Gly Gln Thr Phe Ser Val Leu Ala Cys Tyr Asn Gly  
3345 3350 3355 3360

Ser Pro Ser Gly Val Tyr Gln Cys Ala Met Arg Pro Asn His Thr Ile  
3365 3370 3375

SEQLIST-20480.TXT

Lys Gly Ser Phe Leu Asn Gly Ser Cys Gly Ser Val Gly Phe Asn Ile  
3380 3385 3390

Asp Tyr Asp Cys Val Ser Phe Cys Tyr Met His His Met Glu Leu Pro  
3395 3400 3405

Thr Gly Val His Ala Gly Thr Asp Leu Glu Gly Lys Phe Tyr Gly Pro  
3410 3415 3420

Phe Val Asp Arg Gln Thr Ala Gln Ala Ala Gly Thr Asp Thr Thr Ile  
3425 3430 3435 3440

Thr Leu Asn Val Leu Ala Trp Leu Tyr Ala Ala Val Ile Asn Gly Asp  
3445 3450 3455

Arg Trp Phe Leu Asn Arg Phe Thr Thr Thr Leu Asn Asp Phe Asn Leu  
3460 3465 3470

Val Ala Met Lys Tyr Asn Tyr Glu Pro Leu Thr Gln Asp His Val Asp  
3475 3480 3485

Ile Leu Gly Pro Leu Ser Ala Gln Thr Gly Ile Ala Val Leu Asp Met  
3490 3495 3500

Cys Ala Ala Leu Lys Glu Leu Leu Gln Asn Gly Met Asn Gly Arg Thr  
3505 3510 3515 3520

Ile Leu Gly Ser Thr Ile Leu Glu Asp Glu Phe Thr Pro Phe Asp Val  
3525 3530 3535

Val Arg Gln Cys Ser Gly Val Thr Phe Gln Gly Lys Phe Lys Lys Ile  
3540 3545 3550

Val Lys Gly Thr His His Trp Met Leu Leu Thr Phe Leu Thr Ser Leu  
3555 3560 3565

Leu Ile Leu Val Gln Ser Thr Gln Trp Ser Leu Phe Phe Phe Val Tyr  
3570 3575 3580

Glu Asn Ala Phe Leu Pro Phe Thr Leu Gly Ile Met Ala Ile Ala Ala  
3585 3590 3595 3600

Cys Ala Met Leu Leu Val Lys His Lys His Ala Phe Leu Cys Leu Phe  
3605 3610 3615

Leu Leu Pro Ser Leu Ala Thr Val Ala Tyr Phe Asn Met Val Tyr Met  
3620 3625 3630

Pro Ala Ser Trp Val Met Arg Ile Met Thr Trp Leu Glu Leu Ala Asp  
3635 3640 3645

Thr Ser Leu Ser Gly Tyr Arg Leu Lys Asp Cys Val Met Tyr Ala Ser  
3650 3655 3660

Ala Leu Val Leu Leu Ile Leu Met Thr Ala Arg Thr Val Tyr Asp Asp  
3665 3670 3675 3680

Ala Ala Arg Arg Val Trp Thr Leu Met Asn Val Ile Thr Leu Val Tyr  
3685 3690 3695

Lys Val Tyr Tyr Gly Asn Ala Leu Asp Gln Ala Ile Ser Met Trp Ala  
3700 3705 3710

SEQLIST-20480.TXT

Leu Val Ile Ser Val Thr Ser Asn Tyr Ser Gly Val Val Thr Thr Ile  
3715 3720 3725

Met Phe Leu Ala Arg Ala Ile Val Phe Val Cys Val Glu Tyr Tyr Pro  
3730 3735 3740

Leu Leu Phe Ile Thr Gly Asn Thr Leu Gln Cys Ile Met Leu Val Tyr  
3745 3750 3755 3760

Cys Phe Leu Gly Tyr Cys Cys Cys Cys Tyr Phe Gly Leu Phe Cys Leu  
3765 3770 3775

Leu Asn Arg Tyr Phe Arg Leu Thr Leu Gly Val Tyr Asp Tyr Leu Val  
3780 3785 3790

Ser Thr Gln Glu Phe Arg Tyr Met Asn Ser Gln Gly Leu Leu Pro Pro  
3795 3800 3805

Lys Ser Ser Ile Asp Ala Phe Lys Leu Asn Ile Lys Leu Leu Gly Ile  
3810 3815 3820

Gly Gly Lys Pro Cys Ile Lys Val Ala Thr Val Gln Ser Lys Met Ser  
3825 3830 3835 3840

Asp Val Lys Cys Thr Ser Val Val Leu Leu Ser Val Leu Gln Gln Leu  
3845 3850 3855

Arg Val Glu Ser Ser Ser Lys Leu Trp Ala Gln Cys Val Gln Leu His  
3860 3865 3870

Asn Asp Ile Leu Leu Ala Lys Asp Thr Thr Glu Ala Phe Glu Lys Met  
3875 3880 3885

Val Ser Leu Leu Ser Val Leu Leu Ser Met Gln Gly Ala Val Asp Ile  
3890 3895 3900

Asn Arg Leu Cys Glu Glu Met Leu Asp Asn Arg Ala Thr Leu Gln Ala  
3905 3910 3915 3920

Ile Ala Ser Glu Phe Ser Ser Leu Pro Ser Tyr Ala Ala Tyr Ala Thr  
3925 3930 3935

Ala Gln Glu Ala Tyr Glu Gln Ala Val Ala Asn Gly Asp Ser Glu Val  
3940 3945 3950

Val Leu Lys Lys Leu Lys Lys Ser Leu Asn Val Ala Lys Ser Glu Phe  
3955 3960 3965

Asp Arg Asp Ala Ala Met Gln Arg Lys Leu Glu Lys Met Ala Asp Gln  
3970 3975 3980

Ala Met Thr Gln Met Tyr Lys Gln Ala Arg Ser Glu Asp Lys Arg Ala  
3985 3990 3995 4000

Lys Val Thr Ser Ala Met Gln Thr Met Leu Phe Thr Met Leu Arg Lys  
4005 4010 4015

Leu Asp Asn Asp Ala Leu Asn Asn Ile Ile Asn Asn Ala Arg Asp Gly  
4020 4025 4030

Cys Val Pro Leu Asn Ile Ile Pro Leu Thr Thr Ala Ala Lys Leu Met  
4035 4040 4045

SEQLIST-20480.TXT

Val Val Val Pro Asp Tyr Gly Thr Tyr Lys Asn Thr Cys Asp Gly Asn  
4050 4055 4060

Thr Phe Thr Tyr Ala Ser Ala Leu Trp Glu Ile Gln Gln Val Val Asp  
4065 4070 4075 4080

Ala Asp Ser Lys Ile Val Gln Leu Ser Glu Ile Asn Met Asp Asn Ser  
4085 4090 4095

Pro Asn Leu Ala Trp Pro Leu Ile Val Thr Ala Leu Arg Ala Asn Ser  
4100 4105 4110

Ala Val Lys Leu Gln Asn Asn Glu Leu Ser Pro Val Ala Leu Arg Gln  
4115 4120 4125

Met Ser Cys Ala Ala Gly Thr Thr Gln Thr Ala Cys Thr Asp Asp Asn  
4130 4135 4140

Ala Leu Ala Tyr Tyr Asn Asn Ser Lys Gly Gly Arg Phe Val Leu Ala  
4145 4150 4155 4160

Leu Leu Ser Asp His Gln Asp Leu Lys Trp Ala Arg Phe Pro Lys Ser  
4165 4170 4175

Asp Gly Thr Gly Thr Ile Tyr Thr Glu Leu Glu Pro Pro Cys Arg Phe  
4180 4185 4190

Val Thr Asp Thr Pro Lys Gly Pro Lys Val Lys Tyr Leu Tyr Phe Ile  
4195 4200 4205

Lys Gly Leu Asn Asn Leu Asn Arg Gly Met Val Leu Gly Ser Leu Ala  
4210 4215 4220

Ala Thr Val Arg Leu Gln Ala Gly Asn Ala Thr Glu Val Pro Ala Asn  
4225 4230 4235 4240

Ser Thr Val Leu Ser Phe Cys Ala Phe Ala Val Asp Pro Ala Lys Ala  
4245 4250 4255

Tyr Lys Asp Tyr Leu Ala Ser Gly Gly Gln Pro Ile Thr Asn Cys Val  
4260 4265 4270

Lys Met Leu Cys Thr His Thr Gly Thr Gly Gln Ala Ile Thr Val Thr  
4275 4280 4285

Pro Glu Ala Asn Met Asp Gln Glu Ser Phe Gly Gly Ala Ser Cys Cys  
4290 4295 4300

Leu Tyr Cys Arg Cys His Ile Asp His Pro Asn Pro Lys Gly Phe Cys  
4305 4310 4315 4320

Asp Leu Lys Gly Lys Tyr Val Gln Ile Pro Thr Thr Cys Ala Asn Asp  
4325 4330 4335

Pro Val Gly Phe Thr Leu Arg Asn Thr Val Cys Thr Val Cys Gly Met  
4340 4345 4350

Trp Lys Gly Tyr Gly Cys Ser Cys Asp Gln Leu Arg Glu Pro Leu Met  
4355 4360 4365

Gln Ser Ala Asp Ala Ser Thr Phe Leu Asn Arg Val Cys Gly Val Ser  
4370 4375 4380



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Ala Ala Arg Leu Thr Pro Cys Gly Thr Gly Thr Ser Thr Asp Val Val  
4385 4390 4395 4400

Tyr Arg Ala Phe Asp Ile Tyr Asn Glu Lys Val Ala Gly Phe Ala Lys  
4405 4410 4415

Phe Leu Lys Thr Asn Cys Cys Arg Phe Gln Glu Lys Asp Glu Glu Gly  
4420 4425 4430

Asn Leu Leu Asp Ser Tyr Phe Val Val Lys Arg His Thr Met Ser Asn  
4435 4440 4445

Tyr Gln His Glu Glu Thr Ile Tyr Asn Leu Val Lys Asp Cys Pro Ala  
4450 4455 4460

Val Ala Val His Asp Phe Phe Lys Phe Arg Val Asp Gly Asp Met Val  
4465 4470 4475 4480

Pro His Ile Ser Arg Gln Arg Leu Thr Lys Tyr Thr Met Ala Asp Leu  
4485 4490 4495

Val Tyr Ala Leu Arg His Phe Asp Glu Gly Asn Cys Asp Thr Leu Lys  
4500 4505 4510

Glu Ile Leu Val Thr Tyr Asn Cys Cys Asp Asp Asp Tyr Phe Asn Lys  
4515 4520 4525

Lys Asp Trp Tyr Asp Phe Val Glu Asn Pro Asp Ile Leu Arg Val Tyr  
4530 4535 4540

Ala Asn Leu Gly Glu Arg Val Arg Gln Ser Leu Leu Lys Thr Val Gln  
4545 4550 4555 4560

Phe Cys Asp Ala Met Arg Asp Ala Gly Ile Val Gly Val Leu Thr Leu  
4565 4570 4575

Asp Asn Gln Asp Leu Asn Gly Asn Trp Tyr Asp Phe Gly Asp Phe Val  
4580 4585 4590

Gln Val Ala Pro Gly Cys Gly Val Pro Ile Val Asp Ser Tyr Tyr Ser  
4595 4600 4605

Leu Leu Met Pro Ile Leu Thr Leu Thr Arg Ala Leu Ala Ala Glu Ser  
4610 4615 4620

His Met Asp Ala Asp Leu Ala Lys Pro Leu Ile Lys Trp Asp Leu Leu  
4625 4630 4635 4640

Lys Tyr Asp Phe Thr Glu Glu Arg Leu Cys Leu Phe Asp Arg Tyr Phe  
4645 4650 4655

Lys Tyr Trp Asp Gln Thr Tyr His Pro Asn Cys Ile Asn Cys Leu Asp  
4660 4665 4670

Asp Arg Cys Ile Leu His Cys Ala Asn Phe Asn Val Leu Phe Ser Thr  
4675 4680 4685

Val Phe Pro Pro Thr Ser Phe Gly Pro Leu Val Arg Lys Ile Phe Val  
4690 4695 4700

Asp Gly Val Pro Phe Val Val Ser Thr Gly Tyr His Phe Arg Glu Leu  
4705 4710 4715 4720

SEQLIST-20480.TXT

Gly Val Val His Asn Gln Asp Val Asn Leu His Ser Ser Arg Leu Ser  
4725 4730 4735

Phe Lys Glu Leu Leu Val Tyr Ala Ala Asp Pro Ala Met His Ala Ala  
4740 4745 4750

Ser Gly Asn Leu Leu Leu Asp Lys Arg Thr Thr Cys Phe Ser Val Ala  
4755 4760 4765

Ala Leu Thr Asn Asn Val Ala Phe Gln Thr Val Lys Pro Gly Asn Phe  
4770 4775 4780

Asn Lys Asp Phe Tyr Asp Phe Ala Val Ser Lys Gly Phe Phe Lys Glu  
4785 4790 4800

Gly Ser Ser Val Glu Leu Lys His Phe Phe Phe Ala Gln Asp Gly Asn  
4805 4810 4815

Ala Ala Ile Ser Asp Tyr Asp Tyr Tyr Arg Tyr Asn Leu Pro Thr Met  
4820 4825 4830

Cys Asp Ile Arg Gln Leu Leu Phe Val Val Glu Val Val Asp Lys Tyr  
4835 4840 4845

Phe Asp Cys Tyr Asp Gly Gly Cys Ile Asn Ala Asn Gln Val Ile Val  
4850 4855 4860

Asn Asn Leu Asp Lys Ser Ala Gly Phe Pro Phe Asn Lys Trp Gly Lys  
4865 4870 4875 4880

Ala Arg Leu Tyr Tyr Asp Ser Met Ser Tyr Glu Asp Gln Asp Ala Leu  
4885 4890 4895

Phe Ala Tyr Thr Lys Arg Asn Val Ile Pro Thr Ile Thr Gln Met Asn  
4900 4905 4910

Leu Lys Tyr Ala Ile Ser Ala Lys Asn Arg Ala Arg Thr Val Ala Gly  
4915 4920 4925

Val Ser Ile Cys Ser Thr Met Thr Asn Arg Gln Phe His Gln Lys Leu  
4930 4935 4940

Leu Lys Ser Ile Ala Ala Thr Arg Gly Ala Thr Val Val Ile Gly Thr  
4945 4950 4955 4960

Ser Lys Phe Tyr Gly Gly Trp His Asn Met Leu Lys Thr Val Tyr Ser  
4965 4970 4975

Asp Val Glu Thr Pro His Leu Met Gly Trp Asp Tyr Pro Lys Cys Asp  
4980 4985 4990

Arg Ala Met Pro Asn Met Leu Arg Ile Met Ala Ser Leu Val Leu Ala  
4995 5000 5005

Arg Lys His Asn Thr Cys Cys Asn Leu Ser His Arg Phe Tyr Arg Leu  
5010 5015 5020

Ala Asn Glu Cys Ala Gln Val Leu Ser Glu Met Val Met Cys Gly Gly  
5025 5030 5035 5040

Ser Leu Tyr Val Lys Pro Gly Gly Thr Ser Ser Gly Asp Ala Thr Thr  
5045 5050 5055

SEQLIST-20480.TXT

Ala Tyr Ala Asn Ser Val Phe Asn Ile Cys Gln Ala Val Thr Ala Asn  
5060 5065 5070  
Val Asn Ala Leu Leu Ser Thr Asp Gly Asn Lys Ile Ala Asp Lys Tyr  
5075 5080 5085  
Val Arg Asn Leu Gln His Arg Leu Tyr Glu Cys Leu Tyr Arg Asn Arg  
5090 5095 5100  
Asp Val Asp His Glu Phe Val Asp Glu Phe Tyr Ala Tyr Leu Arg Lys  
5105 5110 5115 5120  
His Phe Ser e e Ile Leu Ser Asp Asp Ala Val Val Cys Tyr Asn  
5125 5130  
Ser Asn Tyr Ala Ala Gln Gly Leu Val Ala Ser Ile Lys Asn Phe Lys  
5140 5145 5150  
Ala Val Leu Tyr Tyr Gln Asn Asn Val Phe e Ser Glu Ala Lys Cys  
5155 5160 5165  
Trp Thr Glu Thr Asp Leu Thr Lys Gly Pr His Glu Phe Cys Ser Gln  
5170 5175 5180  
His Thr e Leu Val Lys Gln Gly Asp Asp Tyr Val Tyr Leu Pr Tyr  
5185 5190 5195 5200  
Pr Asp Pr Ser Arg Ile Leu Gly Ala Gly Cys Phe Val Asp Asp Ile  
5205 5210 5215  
Val Lys Thr Asp Gly Thr Leu e Ile Glu Arg Phe Val Ser Leu Ala  
5220 5225 5230  
Ile Asp Ala Tyr Pr Leu Thr Lys His Pr Asn Gln Glu Tyr Ala Asp  
5235 5240 5245  
Val Phe His Leu Tyr Leu Gln Tyr Ile Arg Lys Leu His Asp Glu Leu  
5250 5255 5260  
Thr Gly His e Leu Asp e Tyr Ser Val e Leu Thr Asn Asp Asn  
5265 5270 5275 5280  
Thr Ser Arg Tyr Trp Glu Pr Glu Phe Tyr Glu Ala e Tyr Thr Pr  
5285 5290 5295  
His Thr Val Leu Gln Ala Val Gly Ala Cys Val Leu Cys Asn Ser Gln  
5300 5305 5310  
Thr Ser Leu Arg Cys Gly Ala Cys Ile Arg Arg Pr Phe Leu Cys Cys  
5315 5320 5325  
Lys Cys Cys Tyr Asp His Val Ile Ser Thr Ser His Lys Leu Val Leu  
5330 5335 5340  
Ser Val Asn Pr Tyr Val Cys Asn Ala Pr Gly Cys Asp Val Thr Asp  
5345 5350 5355 5360  
Val Thr Gln Leu Tyr Leu Gly Gly e Ser Tyr Tyr Cys Lys Ser His  
5365 5370 5375  
Lys Pr Pr Ile Ser Phe Pr Leu Cys Ala Asn Gly Gln Val Phe Gly  
5380 5385 5390

SEQLIST-20480.TXT

Leu Tyr Lys Asn Thr Cys Val Gly Ser Asp Asn Val Thr Asp Phe Asn  
5395 5400 5405

Ala Ile Ala Thr Cys Asp Trp Thr Asn Ala Gly Asp Tyr Ile Leu Ala  
5410 5415 5420

Asn Thr Cys Thr Glu Arg Leu Lys Leu Phe Ala Ala Glu Thr Leu Lys  
5425 5430 5435 5440

Ala Thr Glu Glu Thr Phe Lys Leu Ser Tyr Gly Ile Ala Thr Val Arg  
5445 5450 5455

Glu Val Leu Ser Asp Arg Glu Leu His Leu Ser Trp Glu Val Gly Lys  
5460 5465 5470

Pro Arg Pro Pro Leu Asn Arg Asn Tyr Val Phe Thr Gly Tyr Arg Val  
5475 5480 5485

Thr Lys Asn Ser Lys Val Gln Ile Gly Glu Tyr Thr Phe Glu Lys Gly  
5490 5495 5500

Asp Tyr Gly Asp Ala Val Val Tyr Arg Gly Thr Thr Thr Tyr Lys Leu  
5505 5510 5515 5520

Asn Val Gly Asp Tyr Phe Val Leu Thr Ser His Thr Val Met Pro Leu  
5525 5530 5535

Ser Ala Pro Thr Leu Val Pro Gln Glu His Tyr Val Arg Ile Thr Gly  
5540 5545 5550

Leu Tyr Pro Thr Leu Asn Ile Ser Asp Glu Phe Ser Ser Asn Val Ala  
5555 5560 5565

Asn Tyr Gln Lys Val Gly Met Gln Lys Tyr Ser Thr Leu Gln Gly Pro  
5570 5575 5580

Pro Gly Thr Gly Lys Ser His Phe Ala Ile Gly Leu Ala Leu Tyr Tyr  
5585 5590 5595 5600

Pro Ser Ala Arg Ile Val Tyr Thr Ala Cys Ser His Ala Ala Val Asp  
5605 5610 5615

Ala Leu Cys Glu Lys Ala Leu Lys Tyr Leu Pro Ile Asp Lys Cys Ser  
5620 5625 5630

Arg Ile Ile Pro Ala Arg Ala Arg Val Glu Cys Phe Asp Lys Phe Lys  
5635 5640 5645

Val Asn Ser Thr Leu Glu Gln Tyr Val Phe Cys Thr Val Asn Ala Leu  
5650 5655 5660

Pro Glu Thr Thr Ala Asp Ile Val Val Phe Asp Glu Ile Ser Met Ala  
5665 5670 5675 5680

Thr Asn Tyr Asp Leu Ser Val Val Asn Ala Arg Leu Arg Ala Lys His  
5685 5690 5695

Tyr Val Tyr Ile Gly Asp Pro Ala Gln Leu Pro Ala Pro Arg Thr Leu  
5700 5705 5710

Leu Thr Lys Gly Thr Leu Glu Pro Glu Tyr Phe Asn Ser Val Cys Arg  
5715 5720 5725

SEQLIST-20480.TXT

Leu Met Lys Thr Ile Gly Pro Asp Met Phe Leu Gly Thr Cys Arg Arg  
5730 5735 5740

Cys Pro Ala Glu Ile Val Asp Thr Val Ser Ala Leu Val Tyr Asp Asn  
5745 5750 5755 5760

Lys Leu Lys Ala His Lys Asp Lys Ser Ala Gln Cys Phe Lys Met Phe  
5765 5770 5775

Tyr Lys Gly Val Ile Thr His Asp Val Ser Ser Ala Ile Asn Arg Pro  
5780 5785 5790

Gln Ile Gly Val Val Arg Glu Phe Leu Thr Arg Asn Pro Ala Trp Arg  
5795 5800 5805

Lys Ala Val Phe Ile Ser Pro Tyr Asn Ser Gln Asn Ala Val Ala Ser  
5810 5815 5820

Lys Ile Leu Gly Leu Pro Thr Gln Thr Val Asp Ser Ser Gln Gly Ser  
5825 5830 5835 5840

Glu Tyr Asp Tyr Val Ile Phe Thr Gln Thr Thr Glu Thr Ala His Ser  
5845 5850 5855

Cys Asn Val Asn Arg Phe Asn Val Ala Ile Thr Arg Ala Lys Ile Gly  
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Ile Leu Cys Ile Met Ser Asp Arg Asp Leu Tyr Asp Lys Leu Gln Phe  
5875 5880 5885

Thr Ser Leu Glu Ile Pro Arg Arg Asn Val Ala Thr Leu Gln Ala Glu  
5890 5895 5900

Asn Val Thr Gly Leu Phe Lys Asp Cys Ser Lys Ile Ile Thr Gly Leu  
5905 5910 5915 5920

His Pro Thr Gln Ala Pro Thr His Leu Ser Val Asp Ile Lys Phe Lys  
5925 5930 5935

Thr Glu Gly Leu Cys Val Asp Ile Pro Gly Ile Pro Lys Asp Met Thr  
5940 5945 5950

Tyr Arg Arg Leu Ile Ser Met Met Gly Phe Lys Met Asn Tyr Gln Val  
5955 5960 5965

Asn Gly Tyr Pro Asn Met Phe Ile Thr Arg Glu Glu Ala Ile Arg His  
5970 5975 5980

Val Arg Ala Trp Ile Gly Phe Asp Val Glu Gly Cys His Ala Thr Arg  
5985 5990 5995 6000

Asp Ala Val Gly Thr Asn Leu Pro Leu Gln Leu Gly Phe Ser Thr Gly  
6005 6010 6015

Val Asn Leu Val Ala Val Pro Thr Gly Tyr Val Asp Thr Glu Asn Asn  
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Thr Glu Phe Thr Arg Val Asn Ala Lys Pro Pro Pro Gly Asp Gln Phe  
6035 6040 6045

Lys His Leu Ile Pro Leu Met Tyr Lys Gly Leu Pro Trp Asn Val Val  
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SEQLIST-20480.TXT

Arg Ile Lys Ile Val Gln Met Leu Ser Asp Thr Leu Lys Gly Leu Ser  
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Asp Arg Val Val Phe Val Leu Trp Ala His Gly Phe Glu Leu Thr Ser  
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Met Lys Tyr Phe Val Lys Ile Gly Pro Glu Arg Thr Cys Cys Leu Cys  
6100 6105 6110

Asp Lys Arg Ala Thr Cys Phe Ser Thr Ser Ser Asp Thr Tyr Ala Cys  
6115 6120 6125

Trp Asn His Ser Val Gly Phe Asp Tyr Val Tyr Asn Pro Phe Met Ile  
6130 6135 6140

Asp Val Gln Gln Trp Gly Phe Thr Gly Asn Leu Gln Ser Asn His Asp  
6145 6150 6155 6160

Gln His Cys Gln Val His Gly Asn Ala His Val Ala Ser Cys Asp Ala  
6165 6170 6175

Ile Met Thr Arg Cys Leu Ala Val His Glu Cys Phe Val Lys Arg Val  
6180 6185 6190

Asp Trp Ser Val Glu Tyr Pro Ile Ile Gly Asp Glu Leu Arg Val Asn  
6195 6200 6205

Ser Ala Cys Arg Lys Val Gln His Met Val Val Lys Ser Ala Leu Leu  
6210 6215 6220

Ala Asp Lys Phe Pro Val Leu His Asp Ile Gly Asn Pro Lys Ala Ile  
6225 6230 6235 6240

Lys Cys Val Pro Gln Ala Glu Val Glu Trp Lys Phe Tyr Asp Ala Gln  
6245 6250 6255

Pro Cys Ser Asp Lys Ala Tyr Lys Ile Glu Glu Leu Phe Tyr Ser Tyr  
6260 6265 6270

Ala Thr His His Asp Lys Phe Thr Asp Gly Val Cys Leu Phe Trp Asn  
6275 6280 6285

Cys Asn Val Asp Arg Tyr Pro Ala Asn Ala Ile Val Cys Arg Phe Asp  
6290 6295 6300

Thr Arg Val Leu Ser Asn Leu Asn Leu Pro Gly Cys Asp Gly Gly Ser  
6305 6310 6315 6320

Leu Tyr Val Asn Lys His Ala Phe His Thr Pro Ala Phe Asp Lys Ser  
6325 6330 6335

Ala Phe Thr Asn Leu Lys Gln Leu Pro Phe Phe Tyr Tyr Ser Asp Ser  
6340 6345 6350

Pro Cys Glu Ser His Gly Lys Gln Val Val Ser Asp Ile Asp Tyr Val  
6355 6360 6365

Pro Leu Lys Ser Ala Thr Cys Ile Thr Arg Cys Asn Leu Gly Gly Ala  
6370 6375 6380

Val Cys Arg His His Ala Asn Glu Tyr Arg Gln Tyr Leu Asp Ala Tyr  
6385 6390 6395 6400

SEQLIST-20480.TXT

Asn Met Met Ile Ser Ala Gly Phe Ser Leu Trp Ile Tyr Lys Gln Phe  
6405 6410 6415

Asp Thr Tyr Asn Leu Trp Asn Thr Phe Thr Arg Leu Gln Ser Leu Glu  
6420 6425 6430

Asn Val Ala Tyr Asn Val Val Asn Lys Gly His Phe Asp Gly His Ala  
6435 6440 6445

Gly Glu Ala Pro Val Ser Ile Ile Asn Asn Ala Val Tyr Thr Lys Val  
6450 6455 6460

Asp Gly Ile Asp Val Glu Ile Phe Glu Asn Lys Thr Thr Leu Pro Val  
6465 6470 6475 6480

Asn Val Ala Phe Glu Leu Trp Ala Lys Arg Asn Ile Lys Pro Val Pro  
6485 6490 6495

Glu Ile Lys Ile Leu Asn Asn Leu Gly Val Asp Ile Ala Ala Asn Thr  
6500 6505 6510

Val Ile Trp Asp Tyr Lys Arg Glu Ala Pro Ala His Val Ser Thr Ile  
6515 6520 6525

Gly Val Cys Thr Met Thr Asp Ile Ala Lys Lys Pro Thr Glu Ser Ala  
6530 6535 6540

Cys Ser Ser Leu Thr Val Leu Phe Asp Gly Arg Val Glu Gly Gln Val  
6545 6550 6555 6560

Asp Leu Phe Arg Asn Ala Arg Asn Gly Val Leu Ile Thr Glu Gly Ser  
6565 6570 6575

Val Lys Gly Leu Thr Pro Ser Lys Gly Pro Ala Gln Ala Ser Val Asn  
6580 6585 6590

Gly Val Thr Leu Ile Gly Glu Ser Val Lys Thr Gln Phe Asn Tyr Phe  
6595 6600 6605

Lys Lys Val Asp Gly Ile Ile Gln Gln Leu Pro Glu Thr Tyr Phe Thr  
6610 6615 6620

Gln Ser Arg Asp Leu Glu Asp Phe Lys Pro Arg Ser Gln Met Glu Thr  
6625 6630 6635 6640

Asp Phe Leu Glu Leu Ala Met Asp Glu Phe Ile Gln Arg Tyr Lys Leu  
6645 6650 6655

Glu Gly Tyr Ala Phe Glu His Ile Val Tyr Gly Asp Phe Ser His Gly  
6660 6665 6670

Gln Leu Gly Gly Leu His Leu Met Ile Gly Leu Ala Lys Arg Ser Gln  
6675 6680 6685

Asp Ser Pro Leu Lys Leu Glu Asp Phe Ile Pro Met Asp Ser Thr Val  
6690 6695 6700

Lys Asn Tyr Phe Ile Thr Asp Ala Gln Thr Gly Ser Ser Lys Cys Val  
6705 6710 6715 6720

Cys Ser Val Ile Asp Leu Leu Leu Asp Asp Phe Val Glu Ile Ile Lys  
6725 6730 6735

SEQLIST-20480.TXT

Ser Gln Asp Leu Ser Val Ile Ser Lys Val Val Lys Val Thr Ile Asp  
6740 6745 6750

Tyr Ala Glu Ile Ser Phe Met Leu Trp Cys Lys Asp Gly His Val Glu  
6755 6760 6765

Thr Phe Tyr Pro Lys Leu Gln Ala Ser Arg Ala Trp Gln Pro Gly Val  
6770 6775 6780

Ala Met Pro Asn Leu Tyr Lys Met Gln Arg Met Leu Leu Glu Lys Cys  
6785 6790 6795 6800

Asp Leu Gln Asn Tyr Gly Glu Asn Ala Val Ile Pro Lys Gly Ile Met  
6805 6810 6815

Met Asn Val Ala Lys Tyr Thr Gln Leu Cys Gln Tyr Leu Asn Thr Leu  
6820 6825 6830

Thr Leu Ala Val Pro Tyr Asn Met Arg Val Ile His Phe Gly Ala Gly  
6835 6840 6845

Ser Asp Lys Gly Val Ala Pro Gly Thr Ala Val Leu Arg Gln Trp Leu  
6850 6855 6860

Pro Thr Gly Thr Leu Leu Val Asp Ser Asp Leu Asn Asp Phe Val Ser  
6865 6870 6875 6880

Asp Ala Tyr Ser Thr Leu Ile Gly Asp Cys Ala Thr Val His Thr Ala  
6885 6890 6895

Asn Lys Trp Asp Leu Ile Ile Ser Asp Met Tyr Asp Pro Arg Thr Lys  
6900 6905 6910

His Val Thr Lys Glu Asn Asp Ser Lys Glu Gly Phe Phe Thr Tyr Leu  
6915 6920 6925

Cys Gly Phe Ile Lys Gln Lys Leu Ala Leu Gly Gly Ser Ile Ala Val  
6930 6935 6940

Lys Ile Thr Glu His Ser Trp Asn Ala Asp Leu Tyr Lys Leu Met Gly  
6945 6950 6955 6960

His Phe Ser Trp Trp Thr Ala Phe Val Thr Asn Val Asn Ala Ser Ser  
6965 6970 6975

Ser Glu Ala Phe Leu Ile Gly Ala Asn Tyr Leu Gly Lys Pro Lys Glu  
6980 6985 6990

Gln Ile Asp Gly Tyr Thr Met His Ala Asn Tyr Ile Phe Trp Arg Asn  
6995 7000 7005

Thr Asn Pro Ile Gln Leu Ser Ser Tyr Ser Leu Phe Asp Met Ser Lys  
7010 7015 7020

Phe Pro Leu Lys Leu Arg Gly Thr Ala Val Met Ser Leu Lys Glu Asn  
7025 7030 7035 7040

Gln Ile Asn Asp Met Ile Tyr Ser Leu Leu Glu Lys Gly Arg Leu Ile  
7045 7050 7055

Ile Arg Glu Asn Asn Arg Val Val Val Ser Ser Asp Ile Leu Val Asn  
7060 7065 7070



SEQLIST-20480.TXT

Asn

<210> 7233  
 <211> 4375  
 <212> PRT  
 <213> SARS coronavirus

<400> 7233  
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 1 5 10 15  
 Ser Leu Pro Val Leu Gln Val Arg Asp Val Leu Val Arg Gly Phe Gly  
 20 25 30  
 Asp Ser Val Glu Glu Ala Leu Ser Glu Ala Arg Glu His Leu Lys Asn  
 35 40 45  
 Gly Thr Cys Gly Leu Val Glu Leu Glu Lys Gly Val Leu Pro Gln Leu  
 50 55 60  
 Glu Gln Pro Tyr Val Phe Ile Lys Arg Ser Asp Ala Leu Ser Thr Asn  
 65 70 75 80  
 His Gly His Lys Val Val Glu Leu Val Ala Glu Met Asp Gly Ile Gln  
 85 90 95  
 Tyr Gly Arg Ser Gly Ile Thr Leu Gly Val Leu Val Pro His Val Gly  
 100 105 110  
 Glu Thr Pro Ile Ala Tyr Arg Asn Val Leu Leu Arg Lys Asn Gly Asn  
 115 120 125  
 Lys Gly Ala Gly Gly His Ser Tyr Gly Ile Asp Leu Lys Ser Tyr Asp  
 130 135 140  
 Leu Gly Asp Glu Leu Gly Thr Asp Pro Ile Glu Asp Tyr Glu Gln Asn  
 145 150 155 160  
 Trp Asn Thr Lys His Gly Ser Gly Ala Leu Arg Glu Leu Thr Arg Glu  
 165 170 175  
 Leu Asn Gly Gly Ala Val Thr Arg Tyr Val Asp Asn Asn Phe Cys Gly  
 180 185 190  
 Pro Asp Gly Tyr Pro Leu Asp Cys Ile Lys Asp Phe Leu Ala Arg Ala  
 195 200 205  
 Gly Lys Ser Met Cys Thr Leu Ser Glu Gln Leu Asp Tyr Ile Glu Ser  
 210 215 220  
 Lys Arg Gly Val Tyr Cys Cys Arg Asp His Glu His Glu Ile Ala Trp  
 225 230 235 240  
 Phe Thr Glu Arg Ser Asp Lys Ser Tyr Glu His Gln Thr Pro Phe Glu  
 245 250 255  
 Ile Lys Ser Ala Lys Lys Phe Asp Thr Phe Lys Gly Glu Cys Pro Lys  
 260 265 270  
 Phe Val Phe Pro Leu Asn Ser Lys Val Lys Val Ile Gln Pro Arg Val  
 275 280 285

SEQLIST-20480.TXT

Glu Lys Lys Lys Thr Glu Gly Phe Met Gly Arg Ile Arg Ser Val Tyr  
 290 295 300  
 Pro Val Ala Ser Pro Gln Glu Cys Asn Asn Met His Leu Ser Thr Leu  
 305 310 315 320  
 Met Lys Cys Asn His Cys Asp Glu Val Ser Trp Gln Thr Cys Asp Phe  
 325 330 335  
 Leu Lys Ala Thr Cys Glu His Cys Gly Thr Glu Asn Leu Val Ile Glu  
 340 345 350  
 Gly Pro Thr Thr Cys Gly Tyr Leu Pro Thr Asn Ala Val Val Lys Met  
 355 360 365  
 Pro Cys Pro Ala Cys Gln Asp Pro Glu Ile Gly Pro Glu His Ser Val  
 370 375 380  
 Ala Asp Tyr His Asn His Ser Asn Ile Glu Thr Arg Leu Arg Lys Gly  
 385 390 395 400  
 Gly Arg Thr Arg Cys Phe Gly Gly Cys Val Phe Ala Tyr Val Gly Cys  
 405 410 415  
 Tyr Asn Lys Arg Ala Tyr Trp Val Pro Arg Ala Ser Ala Asp Ile Gly  
 420 425 430  
 Ser Gly His Thr Gly Ile Thr Gly Asp Asn Val Glu Thr Leu Asn Glu  
 435 440 445  
 Asp Leu Leu Glu Ile Leu Ser Arg Glu Arg Val Asn Ile Asn Ile Val  
 450 455 460  
 Gly Asp Phe His Leu Asn Glu Glu Val Ala Ile Ile Leu Ala Ser Phe  
 465 470 475 480  
 Ser Ala Ser Thr Ser Ala Phe Ile Asp Thr Ile Lys Ser Leu Asp Tyr  
 485 490 495  
 Lys Ser Phe Lys Thr Ile Val Glu Ser Cys Gly Asn Tyr Lys Val Thr  
 500 505 510  
 Lys Gly Lys Pro Val Lys Gly Ala Trp Asn Ile Gly Gln Gln Arg Ser  
 515 520 525  
 Val Leu Thr Pro Leu Cys Gly Phe Pro Ser Gln Ala Ala Gly Val Ile  
 530 535 540  
 Arg Ser Ile Phe Ala Arg Thr Leu Asp Ala Ala Asn His Ser Ile Pro  
 545 550 555 560  
 Asp Leu Gln Arg Ala Ala Val Thr Ile Leu Asp Gly Ile Ser Glu Gln  
 565 570 575  
 Ser Leu Arg Leu Val Asp Ala Met Val Tyr Thr Ser Asp Leu Leu Thr  
 580 585 590  
 Asn Ser Val Ile Ile Met Ala Tyr Val Thr Gly Gly Leu Val Gln Gln  
 595 600 605  
 Thr Ser Gln Trp Leu Ser Asn Leu Leu Gly Thr Thr Val Glu Lys Leu  
 610 615 620

SEQLIST-20480.TXT

Arg 625 Pro Ile Phe Glu 630 Trp Ile Glu Ala Lys Leu 635 Ser Ala Gly Val Glu 640  
 Phe Leu Lys Asp 645 Ala Trp Glu Ile Leu Lys 650 Phe Leu Ile Thr Gly Val 655  
 Phe Asp Ile Val 660 Lys Gly Gln Ile Gln Val Ala Ser Asp Asn Ile Lys 670  
 Asp Cys Val 675 Lys Cys Phe Ile Asp 680 Val Val Asn Lys Ala Leu Glu Met 685  
 Cys Ile Asp Gln Val Thr 690 Ile Ala Gly Ala Lys Leu 700 Arg Ser Leu Asn 705  
 Leu Gly Glu Val Phe 710 Ile Ala Gln Ser Lys Gly 715 Leu Tyr Arg Gln Cys 720  
 Ile Arg Gly Lys 725 Glu Gln Leu Gln Leu Leu Met Pro Leu Lys Ala Pro 735  
 Lys Glu Val Thr 740 Phe Leu Glu Gly Asp 745 Ser His Asp Thr Val Leu Thr 750  
 Ser Glu Glu 755 Val Val Leu Lys Asn 760 Gly Glu Leu Glu Ala Leu Glu Thr 765  
 Pro Val Asp Ser Phe Thr 770 Asn 775 Gly Ala Ile Val Gly 780 Thr Pro Val Cys 785  
 Val Asn Gly Leu Met Leu 790 Leu Glu Ile Lys Asp 795 Lys Glu Gln Tyr Cys 800  
 Ala Leu Ser Pro Gly 805 Leu Leu Ala Thr Asn 810 Asn Val Phe Arg Leu Lys 815  
 Gly Gly Ala Pro 820 Ile Lys Gly Val Thr 825 Phe Gly Glu Asp Thr Val Trp 830  
 Glu Val Gln Gly Tyr Lys Asn 840 Val Arg Ile Thr Phe Glu 845 Leu Asp Glu 850  
 Arg Val Asp Lys Val Leu 855 Asn Glu Lys Cys Ser Val Tyr Thr Val Glu 860  
 Ser Gly Thr Glu Val Thr 870 Glu Phe Ala Cys Val 875 Val Ala Glu Ala Val 880  
 Val Lys Thr Leu 885 Gln Pro Val Ser Asp Leu 890 Leu Thr Asn Met Gly Ile 895  
 Asp Leu Asp Glu 900 Trp Ser Val Ala Thr 905 Phe Tyr Leu Phe Asp 910 Asp Ala 915  
 Gly Glu Glu Asn Phe Ser Ser Arg 920 Met Tyr Cys Ser Phe Tyr Pro Pro 925  
 Asp Glu Glu Glu Glu Asp 930 Asp 935 Ala Glu Cys Glu Glu Glu Glu Ile Asp 940  
 Glu Thr Cys Glu His 945 Glu 950 Tyr Gly Thr Glu Asp 955 Asp Tyr Gln Gly Leu 960

SEQLIST-20480.TXT

Pro Leu Glu Phe Gly Ala Ser Ala Glu Thr Val Arg Val Glu Glu Glu  
965 970 975

Glu Glu Glu Asp Trp Leu Asp Asp Thr Thr Glu Gln Ser Glu Ile Glu  
980 985 990

Pro Glu Pro Glu Pro Thr Pro Glu Glu Pro Val Asn Gln Phe Thr Gly  
995 1000 1005

Tyr Leu Lys Leu Thr Asp Asn Val Ala Ile Lys Cys Val Asp Ile Val  
1010 1015 1020

Lys Glu Ala Gln Ser Ala Asn Pro Met Val Ile Val Asn Ala Ala Asn  
1025 1030 1035 1040

Ile His Leu Lys His Gly Gly Gly Val Ala Gly Ala Leu Asn Lys Ala  
1045 1050 1055

Thr Asn Gly Ala Met Gln Lys Glu Ser Asp Asp Tyr Ile Lys Leu Asn  
1060 1065 1070

Gly Pro Leu Thr Val Gly Gly Ser Cys Leu Leu Ser Gly His Asn Leu  
1075 1080 1085

Ala Lys Lys Cys Leu His Val Val Gly Pro Asn Leu Asn Ala Gly Glu  
1090 1095 1100

Asp Ile Gln Leu Leu Lys Ala Ala Tyr Glu Asn Phe Asn Ser Gln Asp  
1105 1110 1115 1120

Ile Leu Leu Ala Pro Leu Leu Ser Ala Gly Ile Phe Gly Ala Lys Pro  
1125 1130 1135

Leu Gln Ser Leu Gln Val Cys Val Gln Thr Val Arg Thr Gln Val Tyr  
1140 1145 1150

Ile Ala Val Asn Asp Lys Ala Leu Tyr Glu Gln Val Val Met Asp Tyr  
1155 1160 1165

Leu Asp Asn Leu Lys Pro Arg Val Glu Ala Pro Lys Gln Glu Glu Pro  
1170 1175 1180

Pro Asn Thr Glu Asp Ser Lys Thr Glu Glu Lys Ser Val Val Gln Lys  
1185 1190 1195 1200

Pro Val Asp Val Lys Pro Lys Ile Lys Ala Cys Ile Asp Glu Val Thr  
1205 1210 1215

Thr Thr Leu Glu Glu Thr Lys Phe Leu Thr Asn Lys Leu Leu Leu Phe  
1220 1225 1230

Ala Asp Ile Asn Gly Lys Leu Tyr His Asp Ser Gln Asn Met Leu Arg  
1235 1240 1245

Gly Glu Asp Met Ser Phe Leu Glu Lys Asp Ala Pro Tyr Met Val Gly  
1250 1255 1260

Asp Val Ile Thr Ser Gly Asp Ile Thr Cys Val Val Ile Pro Ser Lys  
1265 1270 1275 1280

Lys Ala Gly Gly Thr Thr Glu Met Leu Ser Arg Ala Leu Lys Lys Val  
1285 1290 1295

SEQLIST-20480.TXT

Pro Val Asp Glu Tyr Ile Thr Thr Tyr Pro Gly Gln Gly Cys Ala Gly  
1300 1305 1310

Tyr Thr Leu Glu Glu Ala Lys Thr Ala Leu Lys Lys Cys Lys Ser Ala  
1315 1320 1325

Phe Tyr Val Leu Pro Ser Glu Ala Pro Asn Ala Lys Glu Glu Ile Leu  
1330 1335 1340

Gly Thr Val Ser Trp Asn Leu Arg Glu Met Leu Ala His Ala Glu Glu  
1345 1350 1355 1360

Thr Arg Lys Leu Met Pro Ile Cys Met Asp Val Arg Ala Ile Met Ala  
1365 1370 1375

Thr Ile Gln Arg Lys Tyr Lys Gly Ile Lys Ile Gln Glu Gly Ile Val  
1380 1385 1390

Asp Tyr Gly Val Arg Phe Phe Phe Tyr Thr Ser Lys Glu Pro Val Ala  
1395 1400 1405

Ser Ile Ile Thr Lys Leu Asn Ser Leu Asn Glu Pro Leu Val Thr Met  
1410 1415 1420

Pro Ile Gly Tyr Val Thr His Gly Phe Asn Leu Glu Glu Ala Ala Arg  
1425 1430 1435 1440

Cys Met Arg Ser Leu Lys Ala Pro Ala Val Val Ser Val Ser Ser Pro  
1445 1450 1455

Asp Ala Val Thr Thr Tyr Asn Gly Tyr Leu Thr Ser Ser Ser Lys Thr  
1460 1465 1470

Ser Glu Glu His Phe Val Glu Thr Val Ser Leu Ala Gly Ser Tyr Arg  
1475 1480 1485

Asp Trp Ser Tyr Ser Gly Gln Arg Thr Glu Leu Gly Val Glu Phe Leu  
1490 1495 1500

Lys Arg Gly Asp Lys Ile Val Tyr His Thr Leu Glu Ser Pro Val Glu  
1505 1510 1515 1520

Phe His Leu Asp Gly Glu Val Leu Ser Leu Asp Lys Leu Lys Ser Leu  
1525 1530 1535

Leu Ser Leu Arg Glu Val Lys Thr Ile Lys Val Phe Thr Thr Val Asp  
1540 1545 1550

Asn Thr Asn Leu His Thr Gln Leu Val Asp Met Ser Met Thr Tyr Gly  
1555 1560 1565

Gln Gln Phe Gly Pro Thr Tyr Leu Asp Gly Ala Asp Val Thr Lys Ile  
1570 1575 1580

Lys Pro His Val Asn His Glu Gly Lys Thr Phe Phe Val Leu Pro Ser  
1585 1590 1595 1600

Asp Asp Thr Leu Arg Ser Glu Ala Phe Glu Tyr Tyr His Thr Leu Asp  
1605 1610 1615

Glu Ser Phe Leu Gly Arg Tyr Met Ser Ala Leu Asn His Thr Lys Lys  
1620 1625 1630

SEQLIST-20480.TXT

Trp Lys Phe Pro Gln Val Gly Gly Leu Thr Ser Ile Lys Trp Ala Asp  
1635 1640 1645

Asn Asn Cys Tyr Leu Ser Ser Val Leu Leu Ala Leu Gln Gln Leu Glu  
1650 1655 1660

Val Lys Phe Asn Ala Pro Ala Leu Gln Glu Ala Tyr Tyr Arg Ala Arg  
1665 1670 1675 1680

Ala Gly Asp Ala Ala Asn Phe Cys Ala Leu Ile Leu Ala Tyr Ser Asn  
1685 1690 1695

Lys Thr Val Gly Glu Leu Gly Asp Val Arg Glu Thr Met Thr His Leu  
1700 1705 1710

Leu Gln His Ala Asn Leu Glu Ser Ala Lys Arg Val Leu Asn Val Val  
1715 1720 1725

Cys Lys His Cys Gly Gln Lys Thr Thr Thr Leu Thr Gly Val Glu Ala  
1730 1735 1740

Val Met Tyr Met Gly Thr Leu Ser Tyr Asp Asn Leu Lys Thr Gly Val  
1745 1750 1755 1760

Ser Ile Pro Cys Val Cys Gly Arg Asp Ala Thr Gln Tyr Leu Val Gln  
1765 1770 1775

Gln Glu Ser Ser Phe Val Met Met Ser Ala Pro Pro Ala Glu Tyr Lys  
1780 1785 1790

Leu Gln Gln Gly Thr Phe Leu Cys Ala Asn Glu Tyr Thr Gly Asn Tyr  
1795 1800 1805

Gln Cys Gly His Tyr Thr His Ile Thr Ala Lys Glu Thr Leu Tyr Arg  
1810 1815 1820

Ile Asp Gly Ala His Leu Thr Lys Met Ser Glu Tyr Lys Gly Pro Val  
1825 1830 1835 1840

Thr Asp Val Phe Tyr Lys Glu Thr Ser Tyr Thr Thr Thr Ile Lys Pro  
1845 1850 1855

Val Ser Tyr Lys Leu Asp Gly Val Thr Tyr Thr Glu Ile Glu Pro Lys  
1860 1865 1870

Leu Asp Gly Tyr Tyr Lys Lys Asp Asn Ala Tyr Tyr Thr Glu Gln Pro  
1875 1880 1885

Ile Asp Leu Val Pro Thr Gln Pro Leu Pro Asn Ala Ser Phe Asp Asn  
1890 1895 1900

Phe Lys Leu Thr Cys Ser Asn Thr Lys Phe Ala Asp Asp Leu Asn Gln  
1905 1910 1915 1920

Met Thr Gly Phe Thr Lys Pro Ala Ser Arg Glu Leu Ser Val Thr Phe  
1925 1930 1935

Phe Pro Asp Leu Asn Gly Asp Val Val Ala Ile Asp Tyr Arg His Tyr  
1940 1945 1950

Ser Ala Ser Phe Lys Lys Gly Ala Lys Leu Leu His Lys Pro Ile Val  
1955 1960 1965

SEQLIST-20480.TXT

Trp His Ile Asn Gln Ala Thr Thr Lys Thr Thr Phe Lys Pro Asn Thr  
1970 1975 1980

Trp Cys Leu Arg Cys Leu Trp Ser Thr Lys Pro Val Asp Thr Ser Asn  
1985 1990 2000

Ser Phe Glu Val Leu Ala Val Glu Asp Thr Gln Gly Met Asp Asn Leu  
2005 2010 2015

Ala Cys Glu Ser Gln Gln Pro Thr Ser Glu Glu Val Val Glu Asn Pro  
2020 2025 2030

Thr Ile Gln Lys Glu Val Ile Glu Cys Asp Val Lys Thr Thr Glu Val  
2035 2040 2045

Val Gly Asn Val Ile Leu Lys Pro Ser Asp Glu Gly Val Lys Val Thr  
2050 2055 2060

Gln Glu Leu Gly His Glu Asp Leu Met Ala Ala Tyr Val Glu Asn Thr  
2065 2070 2075 2080

Ser Ile Thr Ile Lys Lys Pro Asn Glu Leu Ser Leu Ala Leu Gly Leu  
2085 2090 2095

Lys Thr Ile Ala Thr His Gly Ile Ala Ala Ile Asn Ser Val Pro Trp  
2100 2105 2110

Ser Lys Ile Leu Ala Tyr Val Lys Pro Phe Leu Gly Gln Ala Ala Ile  
2115 2120 2125

Thr Thr Ser Asn Cys Ala Lys Arg Leu Ala Gln Arg Val Phe Asn Asn  
2130 2135 2140

Tyr Met Pro Tyr Val Phe Thr Leu Leu Phe Gln Leu Cys Thr Phe Thr  
2145 2150 2155 2160

Lys Ser Thr Asn Ser Arg Ile Arg Ala Ser Leu Pro Thr Thr Ile Ala  
2165 2170 2175

Lys Asn Ser Val Lys Ser Val Ala Lys Leu Cys Leu Asp Ala Gly Ile  
2180 2185 2190

Asn Tyr Val Lys Ser Pro Lys Phe Ser Lys Leu Phe Thr Ile Ala Met  
2195 2200 2205

Trp Leu Leu Leu Leu Ser Ile Cys Leu Gly Ser Leu Ile Cys Val Thr  
2210 2215 2220

Ala Ala Phe Gly Val Leu Leu Ser Asn Phe Gly Ala Pro Ser Tyr Cys  
2225 2230 2235 2240

Asn Gly Val Arg Glu Leu Tyr Leu Asn Ser Ser Asn Val Thr Thr Met  
2245 2250 2255

Asp Phe Cys Glu Gly Ser Phe Pro Cys Ser Ile Cys Leu Ser Gly Leu  
2260 2265 2270

Asp Ser Leu Asp Ser Tyr Pro Ala Leu Glu Thr Ile Gln Val Thr Ile  
2275 2280 2285

Ser Ser Tyr Lys Leu Asp Leu Thr Ile Leu Gly Leu Ala Ala Glu Trp  
2290 2295 2300

SEQLIST-20480.TXT

Val Leu Ala Tyr Met Leu Phe Thr Lys Phe Phe Tyr Leu Leu Gly Leu  
2305 2310 2315 2320

Ser Ala Ile Met Gln Val Phe Phe Gly Tyr Phe Ala Ser His Phe Ile  
2325 2330 2335

Ser Asn Ser Trp Leu Met Trp Phe Ile Ile Ser Ile Val Gln Met Ala  
2340 2345 2350

Pro Val Ser Ala Met Val Arg Met Tyr Ile Phe Phe Ala Ser Phe Tyr  
2355 2360 2365

Tyr Ile Trp Lys Ser Tyr Val His Ile Met Asp Gly Cys Thr Ser Ser  
2370 2375 2380

Thr Cys Met Met Cys Tyr Lys Arg Asn Arg Ala Thr Arg Val Glu Cys  
2385 2390 2395 2400

Thr Thr Ile Val Asn Gly Met Lys Arg Ser Phe Tyr Val Tyr Ala Asn  
2405 2410 2415

Gly Gly Arg Gly Phe Cys Lys Thr His Asn Trp Asn Cys Leu Asn Cys  
2420 2425 2430

Asp Thr Phe Cys Thr Gly Ser Thr Phe Ile Ser Asp Glu Val Ala Arg  
2435 2440 2445

Asp Leu Ser Leu Gln Phe Lys Arg Pro Ile Asn Pro Thr Asp Gln Ser  
2450 2455 2460

Ser Tyr Ile Val Asp Ser Val Ala Val Lys Asn Gly Ala Leu His Leu  
2465 2470 2475 2480

Tyr Phe Asp Lys Ala Gly Gln Lys Thr Tyr Glu Arg His Pro Leu Ser  
2485 2490 2495

His Phe Val Asn Leu Asp Asn Leu Arg Ala Asn Asn Thr Lys Gly Ser  
2500 2505 2510

Leu Pro Ile Asn Val Ile Val Phe Asp Gly Lys Ser Lys Cys Asp Glu  
2515 2520 2525

Ser Ala Ser Lys Ser Ala Ser Val Tyr Tyr Ser Gln Leu Met Cys Gln  
2530 2535 2540

Pro Ile Leu Leu Leu Asp Gln Ala Leu Val Ser Asp Val Gly Asp Ser  
2545 2550 2555 2560

Thr Glu Val Ser Val Lys Met Phe Asp Ala Tyr Val Asp Thr Phe Ser  
2565 2570 2575

Ala Thr Phe Ser Val Pro Met Glu Lys Leu Lys Ala Leu Val Ala Thr  
2580 2585 2590

Ala His Ser Glu Leu Ala Lys Gly Val Ala Leu Asp Gly Val Leu Ser  
2595 2600 2605

Thr Phe Val Ser Ala Ala Arg Gln Gly Val Val Asp Thr Asp Val Asp  
2610 2615 2620

Thr Lys Asp Val Ile Glu Cys Leu Lys Leu Ser His His Ser Asp Leu  
2625 2630 2635 2640



SEQLIST-20480.TXT

Glu Val Thr Gly Asp Ser Cys Asn Asn Phe Met Leu Thr Tyr Asn Lys  
2645 2650 2655

Val Glu Asn Met Thr Pro Arg Asp Leu Gly Ala Cys Ile Asp Cys Asn  
2660 2665 2670

Ala Arg His Ile Asn Ala Gln Val Ala Lys Ser His Asn Val Ser Leu  
2675 2680 2685

Ile Trp Asn Val Lys Asp Tyr Met Ser Leu Ser Glu Gln Leu Arg Lys  
2690 2695 2700

Gln Ile Arg Ser Ala Ala Lys Lys Asn Asn Ile Pro Phe Arg Leu Thr  
2705 2710 2715 2720

Cys Ala Thr Thr Arg Gln Val Val Asn Val Ile Thr Thr Lys Ile Ser  
2725 2730 2735

Leu Lys Gly Gly Lys Ile Val Ser Thr Cys Phe Lys Leu Met Leu Lys  
2740 2745 2750

Ala Thr Leu Leu Cys Val Leu Ala Ala Leu Val Cys Tyr Ile Val Met  
2755 2760 2765

Pro Val His Thr Leu Ser Ile His Asp Gly Tyr Thr Asn Glu Ile Ile  
2770 2775 2780

Gly Tyr Lys Ala Ile Gln Asp Gly Val Thr Arg Asp Ile Ile Ser Thr  
2785 2790 2795 2800

Asp Asp Cys Phe Ala Asn Lys His Ala Gly Phe Asp Ala Trp Phe Ser  
2805 2810 2815

Gln Arg Gly Gly Ser Tyr Lys Asn Asp Lys Ser Cys Pro Val Val Ala  
2820 2825 2830

Ala Ile Ile Thr Arg Glu Ile Gly Phe Ile Val Pro Gly Leu Pro Gly  
2835 2840 2845

Thr Val Leu Arg Ala Ile Asn Gly Asp Phe Leu His Phe Leu Pro Arg  
2850 2855 2860

Val Phe Ser Ala Val Gly Asn Ile Cys Tyr Thr Pro Ser Lys Leu Ile  
2865 2870 2875 2880

Glu Tyr Ser Asp Phe Ala Thr Ser Ala Cys Val Leu Ala Ala Glu Cys  
2885 2890 2895

Thr Ile Phe Lys Asp Ala Met Gly Lys Pro Val Pro Tyr Cys Tyr Asp  
2900 2905 2910

Thr Asn Leu Leu Glu Gly Ser Ile Ser Tyr Ser Glu Leu Arg Pro Asp  
2915 2920 2925

Thr Arg Tyr Val Leu Met Asp Gly Ser Ile Ile Gln Phe Pro Asn Thr  
2930 2935 2940

Tyr Leu Glu Gly Ser Val Arg Val Val Thr Thr Phe Asp Ala Glu Tyr  
2945 2950 2955 2960

Cys Arg His Gly Thr Cys Glu Arg Ser Glu Val Gly Ile Cys Leu Ser  
2965 2970 2975

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Thr Ser Gly Arg Trp Val Leu Asn Asn Glu His Tyr Arg Ala Leu Ser  
2980 2985 2990

Gly Val Phe Cys Gly Val Asp Ala Met Asn Leu Ile Ala Asn Ile Phe  
2995 3000 3005

Thr Pro Leu Val Gln Pro Val Gly Ala Leu Asp Val Ser Ala Ser Val  
3010 3015 3020

Val Ala Gly Gly Ile Ile Ala Ile Leu Val Thr Cys Ala Ala Tyr Tyr  
3025 3030 3035 3040

Phe Met Lys Phe Arg Arg Val Phe Gly Glu Tyr Asn His Val Val Ala  
3045 3050 3055

Ala Asn Ala Leu Leu Phe Leu Met Ser Phe Thr Ile Leu Cys Leu Val  
3060 3065 3070

Pro Ala Tyr Ser Phe Leu Pro Gly Val Tyr Ser Val Phe Tyr Leu Tyr  
3075 3080 3085

Leu Thr Phe Tyr Phe Thr Asn Asp Val Ser Phe Leu Ala His Leu Gln  
3090 3095 3100

Trp Phe Ala Met Phe Ser Pro Ile Val Pro Phe Trp Ile Thr Ala Ile  
3105 3110 3115 3120

Tyr Val Phe Cys Ile Ser Leu Lys His Cys His Trp Phe Phe Asn Asn  
3125 3130 3135

Tyr Leu Arg Lys Arg Val Met Phe Asn Gly Val Thr Phe Ser Thr Phe  
3140 3145 3150

Glu Glu Ala Ala Leu Cys Thr Phe Leu Leu Asn Lys Glu Met Tyr Leu  
3155 3160 3165

Lys Leu Arg Ser Glu Thr Leu Leu Pro Leu Thr Gln Tyr Asn Arg Tyr  
3170 3175 3180

Leu Ala Leu Tyr Asn Lys Tyr Lys Tyr Phe Ser Gly Ala Leu Asp Thr  
3185 3190 3195 3200

Thr Ser Tyr Arg Glu Ala Ala Cys Cys His Leu Ala Lys Ala Leu Asn  
3205 3210 3215

Asp Phe Ser Asn Ser Gly Ala Asp Val Leu Tyr Gln Pro Pro Gln Thr  
3220 3225 3230

Ser Ile Thr Ser Ala Val Leu Gln Ser Gly Phe Arg Lys Met Ala Phe  
3235 3240 3245

Pro Ser Gly Lys Val Glu Gly Cys Met Val Gln Val Thr Cys Gly Thr  
3250 3255 3260

Thr Thr Leu Asn Gly Leu Trp Leu Asp Asp Thr Val Tyr Cys Pro Arg  
3265 3270 3275 3280

His Val Ile Cys Thr Ala Glu Asp Met Leu Asn Pro Asn Tyr Glu Asp  
3285 3290 3295

Leu Leu Ile Arg Lys Ser Asn His Ser Phe Leu Val Gln Ala Gly Asn  
3300 3305 3310

SEQLIST-20480.TXT

Val Gln Leu Arg Val Ile Gly His Ser Met Gln Asn Cys Leu Leu Arg  
3315 3320 3325

Leu Lys Val Asp Thr Ser Asn Pro Lys Thr Pro Lys Tyr Lys Phe Val  
3330 3335 3340

Arg Ile Gln Pro Gly Gln Thr Phe Ser Val Leu Ala Cys Tyr Asn Gly  
3345 3350 3355 3360

Ser Pro Ser Gly Val Tyr Gln Cys Ala Met Arg Pro Asn His Thr Ile  
3365 3370 3375

Lys Gly Ser Phe Leu Asn Gly Ser Cys Gly Ser Val Gly Phe Asn Ile  
3380 3385 3390

Asp Tyr Asp Cys Val Ser Phe Cys Tyr Met His His Met Glu Leu Pro  
3395 3400 3405

Thr Gly Val His Ala Gly Thr Asp Leu Glu Gly Lys Phe Tyr Gly Pro  
3410 3415 3420

Phe Val Asp Arg Gln Thr Ala Gln Ala Ala Gly Thr Asp Thr Thr Ile  
3425 3430 3435 3440

Thr Leu Asn Val Leu Ala Trp Leu Tyr Ala Ala Val Ile Asn Gly Asp  
3445 3450 3455

Arg Trp Phe Leu Asn Arg Phe Thr Thr Thr Leu Asn Asp Phe Asn Leu  
3460 3465 3470

Val Ala Met Lys Tyr Asn Tyr Glu Pro Leu Thr Gln Asp His Val Asp  
3475 3480 3485

Ile Leu Gly Pro Leu Ser Ala Gln Thr Gly Ile Ala Val Leu Asp Met  
3490 3495 3500

Cys Ala Ala Leu Lys Glu Leu Leu Gln Asn Gly Met Asn Gly Arg Thr  
3505 3510 3515 3520

Ile Leu Gly Ser Thr Ile Leu Glu Asp Glu Phe Thr Pro Phe Asp Val  
3525 3530 3535

Val Arg Gln Cys Ser Gly Val Thr Phe Gln Gly Lys Phe Lys Lys Ile  
3540 3545 3550

Val Lys Gly Thr His His Trp Met Leu Leu Thr Phe Leu Thr Ser Leu  
3555 3560 3565

Leu Ile Leu Val Gln Ser Thr Gln Trp Ser Leu Phe Phe Phe Val Tyr  
3570 3575 3580

Glu Asn Ala Phe Leu Pro Phe Thr Leu Gly Ile Met Ala Ile Ala Ala  
3585 3590 3595 3600

Cys Ala Met Leu Leu Val Lys His Lys His Ala Phe Leu Cys Leu Phe  
3605 3610 3615

Leu Leu Pro Ser Leu Ala Thr Val Ala Tyr Phe Asn Met Val Tyr Met  
3620 3625 3630

Pro Ala Ser Trp Val Met Arg Ile Met Thr Trp Leu Glu Leu Ala Asp  
3635 3640 3645

SEQLIST-20480.TXT

Thr Ser Leu Ser Gly Tyr Arg Leu Lys Asp Cys Val Met Tyr Ala Ser  
3650 3655 3660

Ala Leu Val Leu Leu Ile Leu Met Thr Ala Arg Thr Val Tyr Asp Asp  
3665 3670 3675 3680

Ala Ala Arg Arg Val Trp Thr Leu Met Asn Val Ile Thr Leu Val Tyr  
3685 3690 3695

Lys Val Tyr Tyr Gly Asn Ala Leu Asp Gln Ala Ile Ser Met Trp Ala  
3700 3705 3710

Leu Val Ile Ser Val Thr Ser Asn Tyr Ser Gly Val Val Thr Thr Ile  
3715 3720 3725

Met Phe Leu Ala Arg Ala Ile Val Phe Val Cys Val Glu Tyr Tyr Pro  
3730 3735 3740

Leu Leu Phe Ile Thr Gly Asn Thr Leu Gln Cys Ile Met Leu Val Tyr  
3745 3750 3755 3760

Cys Phe Leu Gly Tyr Cys Cys Cys Cys Tyr Phe Gly Leu Phe Cys Leu  
3765 3770 3775

Leu Asn Arg Tyr Phe Arg Leu Thr Leu Gly Val Tyr Asp Tyr Leu Val  
3780 3785 3790

Ser Thr Gln Glu Phe Arg Tyr Met Asn Ser Gln Gly Leu Leu Pro Pro  
3795 3800 3805

Lys Ser Ser Ile Asp Ala Phe Lys Leu Asn Ile Lys Leu Leu Gly Ile  
3810 3815 3820

Gly Gly Lys Pro Cys Ile Lys Val Ala Thr Val Gln Ser Lys Met Ser  
3825 3830 3835 3840

Asp Val Lys Cys Thr Ser Val Val Leu Leu Ser Val Leu Gln Gln Leu  
3845 3850 3855

Arg Val Glu Ser Ser Ser Lys Leu Trp Ala Gln Cys Val Gln Leu His  
3860 3865 3870

Asn Asp Ile Leu Leu Ala Lys Asp Thr Thr Glu Ala Phe Glu Lys Met  
3875 3880 3885

Val Ser Leu Leu Ser Val Leu Leu Ser Met Gln Gly Ala Val Asp Ile  
3890 3895 3900

Asn Arg Leu Cys Glu Glu Met Leu Asp Asn Arg Ala Thr Leu Gln Ala  
3905 3910 3915 3920

Ile Ala Ser Glu Phe Ser Ser Leu Pro Ser Tyr Ala Ala Tyr Ala Thr  
3925 3930 3935

Ala Gln Glu Ala Tyr Glu Gln Ala Val Ala Asn Gly Asp Ser Glu Val  
3940 3945 3950

Val Leu Lys Lys Leu Lys Lys Ser Leu Asn Val Ala Lys Ser Glu Phe  
3955 3960 3965

Asp Arg Asp Ala Ala Met Gln Arg Lys Leu Glu Lys Met Ala Asp Gln  
3970 3975 3980

SEQLIST-20480.TXT

Ala Met Thr Gln Met Tyr Lys Gln Ala Arg Ser Glu Asp Lys Arg Ala  
3985 3990 3995 4000

Lys Val Thr Ser Ala Met Gln Thr Met Leu Phe Thr Met Leu Arg Lys  
4005 4010 4015

Leu Asp Asn Asp Ala Leu Asn Asn Ile Ile Asn Asn Ala Arg Asp Gly  
4020 4025 4030

Cys Val Pro Leu Asn Ile Ile Pro Leu Thr Thr Ala Ala Lys Leu Met  
4035 4040 4045

Val Val Val Pro Asp Tyr Gly Thr Tyr Lys Asn Thr Cys Asp Gly Asn  
4050 4055 4060

Thr Phe Thr Tyr Ala Ser Ala Leu Trp Glu Ile Gln Gln Val Val Asp  
4065 4070 4075 4080

Ala Asp Ser Lys Ile Val Gln Leu Ser Glu Ile Asn Met Asp Asn Ser  
4085 4090 4095

Pro Asn Leu Ala Trp Pro Leu Ile Val Thr Ala Leu Arg Ala Asn Ser  
4100 4105 4110

Ala Val Lys Leu Gln Asn Asn Glu Leu Ser Pro Val Ala Leu Arg Gln  
4115 4120 4125

Met Ser Cys Ala Ala Gly Thr Thr Gln Thr Ala Cys Thr Asp Asp Asn  
4130 4135 4140

Ala Leu Ala Tyr Tyr Asn Asn Ser Lys Gly Gly Arg Phe Val Leu Ala  
4145 4150 4155 4160

Leu Leu Ser Asp His Gln Asp Leu Lys Trp Ala Arg Phe Pro Lys Ser  
4165 4170 4175

Asp Gly Thr Gly Thr Ile Tyr Thr Glu Leu Glu Pro Pro Cys Arg Phe  
4180 4185 4190

Val Thr Asp Thr Pro Lys Gly Pro Lys Val Lys Tyr Leu Tyr Phe Ile  
4195 4200 4205

Lys Gly Leu Asn Asn Leu Asn Arg Gly Met Val Leu Gly Ser Leu Ala  
4210 4215 4220

Ala Thr Val Arg Leu Gln Ala Gly Asn Ala Thr Glu Val Pro Ala Asn  
4225 4230 4235 4240

Ser Thr Val Leu Ser Phe Cys Ala Phe Ala Val Asp Pro Ala Lys Ala  
4245 4250 4255

Tyr Lys Asp Tyr Leu Ala Ser Gly Gly Gln Pro Ile Thr Asn Cys Val  
4260 4265 4270

Lys Met Leu Cys Thr His Thr Gly Thr Gly Gln Ala Ile Thr Val Thr  
4275 4280 4285

Pro Glu Ala Asn Met Asp Gln Glu Ser Phe Gly Gly Ala Ser Cys Cys  
4290 4295 4300

Leu Tyr Cys Arg Cys His Ile Asp His Pro Asn Pro Lys Gly Phe Cys  
4305 4310 4315 4320

SEQLIST-20480.TXT

Asp Leu Lys Gly Lys Tyr Val Gln Ile Pro Thr Thr Cys Ala Asn Asp  
4325 4330 4335

Pro Val Gly Phe Thr Leu Arg Asn Thr Val Cys Thr Val Cys Gly Met  
4340 4345 4350

Trp Lys Gly Tyr Gly Cys Ser Cys Asp Gln Leu Arg Glu Pro Leu Met  
4355 4360 4365

Gln Ser Ala Asp Ala Ser Thr  
4370 4375

<210> 7234  
<211> 2692  
<212> PRT  
<213> SARS coronavirus

<400> 7234  
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Asp Val Val Tyr Arg Ala Phe Asp Ile Tyr Asn Glu Lys Val Ala Gly  
20 25 30

Phe Ala Lys Phe Leu Lys Thr Asn Cys Cys Arg Phe Gln Glu Lys Asp  
35 40 45

Glu Glu Gly Asn Leu Leu Asp Ser Tyr Phe Val Val Lys Arg His Thr  
50 55 60

Met Ser Asn Tyr Gln His Glu Glu Thr Ile Tyr Asn Leu Val Lys Asp  
65 70 75 80

Cys Pro Ala Val Ala Val His Asp Phe Phe Lys Phe Arg Val Asp Gly  
85 90 95

Asp Met Val Pro His Ile Ser Arg Gln Arg Leu Thr Lys Tyr Thr Met  
100 105 110

Ala Asp Leu Val Tyr Ala Leu Arg His Phe Asp Glu Gly Asn Cys Asp  
115 120 125

Thr Leu Lys Glu Ile Leu Val Thr Tyr Asn Cys Cys Asp Asp Asp Tyr  
130 135 140

Phe Asn Lys Lys Asp Trp Tyr Asp Phe Val Glu Asn Pro Asp Ile Leu  
145 150 155 160

Arg Val Tyr Ala Asn Leu Gly Glu Arg Val Arg Gln Ser Leu Leu Lys  
165 170 175

Thr Val Gln Phe Cys Asp Ala Met Arg Asp Ala Gly Ile Val Gly Val  
180 185 190

Leu Thr Leu Asp Asn Gln Asp Leu Asn Gly Asn Trp Tyr Asp Phe Gly  
195 200 205

Asp Phe Val Gln Val Ala Pro Gly Cys Gly Val Pro Ile Val Asp Ser  
210 215 220

Tyr Tyr Ser Leu Leu Met Pro Ile Leu Thr Leu Thr Arg Ala Leu Ala  
225 230 235 240

SEQLIST-20480.TXT

Ala Glu Ser His Met 245 Asp Ala Asp Leu Ala 250 Lys Pro Leu Ile Lys 255 Trp  
 Asp Leu Leu Lys 260 Tyr Asp Phe Thr Glu 265 Glu Arg Leu Cys Leu 270 Phe Asp  
 Arg Tyr Phe 275 Lys Tyr Trp Asp Gln 280 Thr Tyr His Pro Asn 285 Cys Ile Asn  
 Cys Leu 290 Asp Asp Arg Cys Ile 295 Leu His Cys Ala Asn 300 Phe Asn Val Leu  
 Phe 305 Ser Thr Val Phe Pro 310 Pro Thr Ser Phe Gly 315 Pro Leu Val Arg Lys 320  
 Ile Phe Val Asp Gly 325 Val Pro Phe Val Val 330 Ser Thr Gly Tyr His 335 Phe  
 Arg Glu Leu Gly 340 Val Val His Asn Gln 345 Asp Val Asn Leu His 350 Ser Ser  
 Arg Leu Ser 355 Phe Lys Glu Leu Leu 360 Val Tyr Ala Ala Asp 365 Pro Ala Met  
 His Ala 370 Ala Ser Gly Asn Leu 375 Leu Leu Asp Lys Arg 380 Thr Thr Cys Phe  
 Ser 385 Val Ala Ala Leu Thr 390 Asn Asn Val Ala Phe 395 Gln Thr Val Lys Pro 400  
 Gly Asn Phe Asn Lys 405 Asp Phe Tyr Asp Phe 410 Ala Val Ser Lys Gly 415 Phe  
 Phe Lys Glu Gly 420 Ser Ser Val Glu Leu 425 Lys His Phe Phe 430 Phe Ala Gln  
 Asp Gly Asn 435 Ala Ala Ile Ser Asp 440 Tyr Asp Tyr Tyr Arg 445 Tyr Asn Leu  
 Pro Thr 450 Met Cys Asp Ile Arg 455 Gln Leu Leu Phe Val 460 Val Glu Val Val  
 Asp 465 Lys Tyr Phe Asp Cys 470 Tyr Asp Gly Gly Cys 475 Ile Asn Ala Asn Gln 480  
 Val Ile Val Asn Asn 485 Leu Asp Lys Ser Ala 490 Gly Phe Pro Phe Asn 495 Lys  
 Trp Gly Lys Ala 500 Arg Leu Tyr Tyr Asp 505 Ser Met Ser Tyr Glu 510 Asp Gln  
 Asp Ala Leu 515 Phe Ala Tyr Thr Lys 520 Arg Asn Val Ile Pro 525 Thr Ile Thr  
 Gln Met 530 Asn Leu Lys Tyr Ala 535 Ile Ser Ala Lys Asn 540 Arg Ala Arg Thr  
 Val Ala Gly Val Ser Ile 550 Cys Ser Thr Met Thr 555 Asn Arg Gln Phe His 560  
 Gln Lys Leu Leu Lys 565 Ser Ile Ala Ala Thr 570 Arg Gly Ala Thr Val 575 Val

SEQLIST-20480.TXT

Ile Gly Thr Ser 580 Lys Phe Tyr Gly Gly 585 Trp His Asn Met Leu 590 Lys Thr  
Val Tyr Ser 595 Asp Val Glu Thr Pro 600 His Leu Met Gly Trp 605 Asp Tyr Pro  
Lys Cys 610 Asp Arg Ala Met Pro 615 Asn Met Leu Arg Ile 620 Met Ala Ser Leu  
Val 625 Leu Ala Arg Lys His 630 Asn Thr Cys Cys Asn 635 Leu Ser His Arg Phe 640  
Tyr Arg Leu Ala Asn 645 Glu Cys Ala Gln Val 650 Leu Ser Glu Met Val 655 Met  
Cys Gly Gly Ser 660 Leu Tyr Val Lys Pro 665 Gly Gly Thr Ser Ser 670 Gly Asp  
Ala Thr Thr 675 Ala Tyr Ala Asn Ser 680 Val Phe Asn Ile Cys 685 Gln Ala Val  
Thr Ala 690 Asn Val Asn Ala Leu 695 Leu Ser Thr Asp Gly 700 Asn Lys Ile Ala  
Asp 705 Lys Tyr Val Arg Asn 710 Leu Gln His Arg Leu 715 Tyr Glu Cys Leu Tyr 720  
Arg Asn Arg Asp Val 725 Asp His Glu Phe Val 730 Asp Glu Phe Tyr Ala 735 Tyr  
Leu Arg Lys His 740 Phe Ser Met Met Ile 745 Leu Ser Asp Asp Ala 750 Val Val  
Cys Tyr Asn 755 Ser Asn Tyr Ala Ala 760 Gln Gly Leu Val Ala 765 Ser Ile Lys  
Asn Phe 770 Lys Ala Val Leu Tyr 775 Tyr Gln Asn Asn Val 780 Phe Met Ser Glu  
Ala 785 Lys Cys Trp Thr Glu 790 Thr Asp Leu Thr Lys 795 Gly Pro His Glu Phe 800  
Cys Ser Gln His Thr 805 Met Leu Val Lys Gln 810 Gly Asp Asp Tyr Val 815 Tyr  
Leu Pro Tyr Pro 820 Asp Pro Ser Arg Ile 825 Leu Gly Ala Gly Cys 830 Phe Val  
Asp Asp Ile 835 Val Lys Thr Asp Gly 840 Thr Leu Met Ile Glu 845 Arg Phe Val  
Ser Leu 850 Ala Ile Asp Ala Tyr 855 Pro Leu Thr Lys His 860 Pro Asn Gln Glu  
Tyr 865 Ala Asp Val Phe His 870 Leu Tyr Leu Gln Tyr 875 Ile Arg Lys Leu His 880  
Asp Glu Leu Thr Gly 885 His Met Leu Asp Met 890 Tyr Ser Val Met Leu 895 Thr  
Asn Asp Asn Thr 900 Ser Arg Tyr Trp Glu 905 Pro Glu Phe Tyr Glu 910 Ala Met



SEQLIST-20480.TXT

Tyr Thr Pro His Thr Val Leu Gln Ala Val Gly Ala Cys Val Leu Cys  
 915 920 925  
 Asn Ser Gln Thr Ser Leu Arg Cys Gly Ala Cys Ile Arg Arg Pro Phe  
 930 935 940  
 Leu Cys Cys Lys Cys Cys Tyr Asp His Val Ile Ser Thr Ser His Lys  
 945 950 955 960  
 Leu Val Leu Ser Val Asn Pro Tyr Val Cys Asn Ala Pro Gly Cys Asp  
 965 970 975  
 Val Thr Asp Val Thr Gln Leu Tyr Leu Gly Gly Met Ser Tyr Tyr Cys  
 980 985 990  
 Lys Ser His Lys Pro Pro Ile Ser Phe Pro Leu Cys Ala Asn Gly Gln  
 995 1000 1005  
 Val Phe Gly Leu Tyr Lys Asn Thr Cys Val Gly Ser Asp Asn Val Thr  
 1010 1015 1020  
 Asp Phe Asn Ala Ile Ala Thr Cys Asp Trp Thr Asn Ala Gly Asp Tyr  
 1025 1030 1035 1040  
 Ile Leu Ala Asn Thr Cys Thr Glu Arg Leu Lys Leu Phe Ala Ala Glu  
 1045 1050 1055  
 Thr Leu Lys Ala Thr Glu Glu Thr Phe Lys Leu Ser Tyr Gly Ile Ala  
 1060 1065 1070  
 Thr Val Arg Glu Val Leu Ser Asp Arg Glu Leu His Leu Ser Trp Glu  
 1075 1080 1085  
 Val Gly Lys Pro Arg Pro Pro Leu Asn Arg Asn Tyr Val Phe Thr Gly  
 1090 1095 1100  
 Tyr Arg Val Thr Lys Asn Ser Lys Val Gln Ile Gly Glu Tyr Thr Phe  
 1105 1110 1115 1120  
 Glu Lys Gly Asp Tyr Gly Asp Ala Val Val Tyr Arg Gly Thr Thr Thr  
 1125 1130 1135  
 Tyr Lys Leu Asn Val Gly Asp Tyr Phe Val Leu Thr Ser His Thr Val  
 1140 1145 1150  
 Met Pro Leu Ser Ala Pro Thr Leu Val Pro Gln Glu His Tyr Val Arg  
 1155 1160 1165  
 Ile Thr Gly Leu Tyr Pro Thr Leu Asn Ile Ser Asp Glu Phe Ser Ser  
 1170 1175 1180  
 Asn Val Ala Asn Tyr Gln Lys Val Gly Met Gln Lys Tyr Ser Thr Leu  
 1185 1190 1195 1200  
 Gln Gly Pro Pro Gly Thr Gly Lys Ser His Phe Ala Ile Gly Leu Ala  
 1205 1210 1215  
 Leu Tyr Tyr Pro Ser Ala Arg Ile Val Tyr Thr Ala Cys Ser His Ala  
 1220 1225 1230  
 Ala Val Asp Ala Leu Cys Glu Lys Ala Leu Lys Tyr Leu Pro Ile Asp  
 1235 1240 1245

SEQLIST-20480.TXT

Lys Cys<sup>1</sup> Ser Arg Ile Ile Pro Ala Arg Ala Arg Val Glu Cys Phe Asp  
1250 1255 1260

Lys Phe Lys Val Asn Ser Thr Leu Glu Gln Tyr Val Phe Cys Thr Val  
1265 1270 1275 1280

Asn Ala Leu Pro Glu Thr Thr Ala Asp Ile Val Val Phe Asp Glu Ile  
1285 1290 1295

Ser Met Ala Thr Asn Tyr Asp Leu Ser Val Val Asn Ala Arg Leu Arg  
1300 1305 1310

Ala Lys His Tyr Val Tyr Ile Gly Asp Pro Ala Gln Leu Pro Ala Pro  
1315 1320 1325

Arg Thr Leu Leu Thr Lys Gly Thr Leu Glu Pro Glu Tyr Phe Asn Ser  
1330 1335 1340

Val Cys Arg Leu Met Lys Thr Ile Gly Pro Asp Met Phe Leu Gly Thr  
1345 1350 1355 1360

Cys Arg Arg Cys Pro Ala Glu Ile Val Asp Thr Val Ser Ala Leu Val  
1365 1370 1375

Tyr Asp Asn Lys Leu Lys Ala His Lys Asp Lys Ser Ala Gln Cys Phe  
1380 1385 1390

Lys Met Phe Tyr Lys Gly Val Ile Thr His Asp Val Ser Ser Ala Ile  
1395 1400 1405

Asn Arg Pro Gln Ile Gly Val Val Arg Glu Phe Leu Thr Arg Asn Pro  
1410 1415 1420

Ala Trp Arg Lys Ala Val Phe Ile Ser Pro Tyr Asn Ser Gln Asn Ala  
1425 1430 1435 1440

Val Ala Ser Lys Ile Leu Gly Leu Pro Thr Gln Thr Val Asp Ser Ser  
1445 1450 1455

Gln Gly Ser Glu Tyr Asp Tyr Val Ile Phe Thr Gln Thr Thr Glu Thr  
1460 1465 1470

Ala His Ser Cys Asn Val Asn Arg Phe Asn Val Ala Ile Thr Arg Ala  
1475 1480 1485

Lys Ile Gly Ile Leu Cys Ile Met Ser Asp Arg Asp Leu Tyr Asp Lys  
1490 1495 1500

Leu Gln Phe Thr Ser Leu Glu Ile Pro Arg Arg Asn Val Ala Thr Leu  
1505 1510 1515 1520

Gln Ala Glu Asn Val Thr Gly Leu Phe Lys Asp Cys Ser Lys Ile Ile  
1525 1530 1535

Thr Gly Leu His Pro Thr Gln Ala Pro Thr His Leu Ser Val Asp Ile  
1540 1545 1550

Lys Phe Lys Thr Glu Gly Leu Cys Val Asp Ile Pro Gly Ile Pro Lys  
1555 1560 1565

Asp Met Thr Tyr Arg Arg Leu Ile Ser Met Met Gly Phe Lys Met Asn  
1570 1575 1580

SEQLIST-20480.TXT

Tyr Gln Val Asn Gly Tyr Pro Asn Met Phe Ile Thr Arg Glu Glu Ala  
 1585 1590 1595 1600  
 Ile Arg His Val Arg Ala Trp Ile Gly Phe Asp Val Glu Gly Cys His  
 1605 1610 1615  
 Ala Thr Arg Asp Ala Val Gly Thr Asn Leu Pro Leu Gln Leu Gly Phe  
 1620 1625 1630  
 Ser Thr Gly Val Asn Leu Val Ala Val Pro Thr Gly Tyr Val Asp Thr  
 1635 1640 1645  
 Glu Asn Asn Thr Glu Phe Thr Arg Val Asn Ala Lys Pro Pro Pro Gly  
 1650 1655 1660  
 Asp Gln Phe Lys His Leu Ile Pro Leu Met Tyr Lys Gly Leu Pro Trp  
 1665 1670 1675 1680  
 Asn Val Val Arg Ile Lys Ile Val Gln Met Leu Ser Asp Thr Leu Lys  
 1685 1690 1695  
 Gly Leu Ser Asp Arg Val Val Phe Val Leu Trp Ala His Gly Phe Glu  
 1700 1705 1710  
 Leu Thr Ser Met Lys Tyr Phe Val Lys Ile Gly Pro Glu Arg Thr Cys  
 1715 1720 1725  
 Cys Leu Cys Asp Lys Arg Ala Thr Cys Phe Ser Thr Ser Ser Asp Thr  
 1730 1735 1740  
 Tyr Ala Cys Trp Asn His Ser Val Gly Phe Asp Tyr Val Tyr Asn Pro  
 1745 1750 1755 1760  
 Phe Met Ile Asp Val Gln Gln Trp Gly Phe Thr Gly Asn Leu Gln Ser  
 1765 1770 1775  
 Asn His Asp Gln His Cys Gln Val His Gly Asn Ala His Val Ala Ser  
 1780 1785 1790  
 Cys Asp Ala Ile Met Thr Arg Cys Leu Ala Val His Glu Cys Phe Val  
 1795 1800 1805  
 Lys Arg Val Asp Trp Ser Val Glu Tyr Pro Ile Ile Gly Asp Glu Leu  
 1810 1815 1820  
 Arg Val Asn Ser Ala Cys Arg Lys Val Gln His Met Val Val Lys Ser  
 1825 1830 1835 1840  
 Ala Leu Leu Ala Asp Lys Phe Pro Val Leu His Asp Ile Gly Asn Pro  
 1845 1850 1855  
 Lys Ala Ile Lys Cys Val Pro Gln Ala Glu Val Glu Trp Lys Phe Tyr  
 1860 1865 1870  
 Asp Ala Gln Pro Cys Ser Asp Lys Ala Tyr Lys Ile Glu Glu Leu Phe  
 1875 1880 1885  
 Tyr Ser Tyr Ala Thr His His Asp Lys Phe Thr Asp Gly Val Cys Leu  
 1890 1895 1900  
 Phe Trp Asn Cys Asn Val Asp Arg Tyr Pro Ala Asn Ala Ile Val Cys  
 1905 1910 1915 1920

SEQLIST-20480.TXT

Arg Phe Asp Thr Arg Val Leu Ser Asn Leu Asn Leu Pro Gly Cys Asp  
1925 1930 1935

Gly Gly Ser Leu Tyr Val Asn Lys His Ala Phe His Thr Pro Ala Phe  
1940 1945 1950

Asp Lys Ser Ala Phe Thr Asn Leu Lys Gln Leu Pro Phe Phe Tyr Tyr  
1955 1960 1965

Ser Asp Ser Pro Cys Glu Ser His Gly Lys Gln Val Val Ser Asp Ile  
1970 1975 1980

Asp Tyr Val Pro Leu Lys Ser Ala Thr Cys Ile Thr Arg Cys Asn Leu  
1985 1990 1995 2000

Gly Gly Ala Val Cys Arg His His Ala Asn Glu Tyr Arg Gln Tyr Leu  
2005 2010 2015

Asp Ala Tyr Asn Met Met Ile Ser Ala Gly Phe Ser Leu Trp Ile Tyr  
2020 2025 2030

Lys Gln Phe Asp Thr Tyr Asn Leu Trp Asn Thr Phe Thr Arg Leu Gln  
2035 2040 2045

Ser Leu Glu Asn Val Ala Tyr Asn Val Val Asn Lys Gly His Phe Asp  
2050 2055 2060

Gly His Ala Gly Glu Ala Pro Val Ser Ile Ile Asn Asn Ala Val Tyr  
2065 2070 2075 2080

Thr Lys Val Asp Gly Ile Asp Val Glu Ile Phe Glu Asn Lys Thr Thr  
2085 2090 2095

Leu Pro Val Asn Val Ala Phe Glu Leu Trp Ala Lys Arg Asn Ile Lys  
2100 2105 2110

Pro Val Pro Glu Ile Lys Ile Leu Asn Asn Leu Gly Val Asp Ile Ala  
2115 2120 2125

Ala Asn Thr Val Ile Trp Asp Tyr Lys Arg Glu Ala Pro Ala His Val  
2130 2135 2140

Ser Thr Ile Gly Val Cys Thr Met Thr Asp Ile Ala Lys Lys Pro Thr  
2145 2150 2155 2160

Glu Ser Ala Cys Ser Ser Leu Thr Val Leu Phe Asp Gly Arg Val Glu  
2165 2170 2175

Gly Gln Val Asp Leu Phe Arg Asn Ala Arg Asn Gly Val Leu Ile Thr  
2180 2185 2190

Glu Gly Ser Val Lys Gly Leu Thr Pro Ser Lys Gly Pro Ala Gln Ala  
2195 2200 2205

Ser Val Asn Gly Val Thr Leu Ile Gly Glu Ser Val Lys Thr Gln Phe  
2210 2215 2220

Asn Tyr Phe Lys Lys Val Asp Gly Ile Ile Gln Gln Leu Pro Glu Thr  
2225 2230 2235 2240

Tyr Phe Thr Gln Ser Arg Asp Leu Glu Asp Phe Lys Pro Arg Ser Gln  
2245 2250 2255

SEQLIST-20480.TXT

Met Glu Thr Asp Phe Leu Glu Leu Ala Met Asp Glu Phe Ile Gln Arg  
2260 2265 2270

Tyr Lys Leu Glu Gly Tyr Ala Phe Glu His Ile Val Tyr Gly Asp Phe  
2275 2280 2285

Ser His Gly Gln Leu Gly Gly Leu His Leu Met Ile Gly Leu Ala Lys  
2290 2295 2300

Arg Ser Gln Asp Ser Pro Leu Lys Leu Glu Asp Phe Ile Pro Met Asp  
2305 2310 2315 2320

Ser Thr Val Lys Asn Tyr Phe Ile Thr Asp Ala Gln Thr Gly Ser Ser  
2325 2330 2335

Lys Cys Val Cys Ser Val Ile Asp Leu Leu Leu Asp Asp Phe Val Glu  
2340 2345 2350

Ile Ile Lys Ser Gln Asp Leu Ser Val Ile Ser Lys Val Val Lys Val  
2355 2360 2365

Thr Ile Asp Tyr Ala Glu Ile Ser Phe Met Leu Trp Cys Lys Asp Gly  
2370 2375 2380

His Val Glu Thr Phe Tyr Pro Lys Leu Gln Ala Ser Arg Ala Trp Gln  
2385 2390 2395 2400

Pro Gly Val Ala Met Pro Asn Leu Tyr Lys Met Gln Arg Met Leu Leu  
2405 2410 2415

Glu Lys Cys Asp Leu Gln Asn Tyr Gly Glu Asn Ala Val Ile Pro Lys  
2420 2425 2430

Gly Ile Met Met Asn Val Ala Lys Tyr Thr Gln Leu Cys Gln Tyr Leu  
2435 2440 2445

Asn Thr Leu Thr Leu Ala Val Pro Tyr Asn Met Arg Val Ile His Phe  
2450 2455 2460

Gly Ala Gly Ser Asp Lys Gly Val Ala Pro Gly Thr Ala Val Leu Arg  
2465 2470 2475 2480

Gln Trp Leu Pro Thr Gly Thr Leu Leu Val Asp Ser Asp Leu Asn Asp  
2485 2490 2495

Phe Val Ser Asp Ala Tyr Ser Thr Leu Ile Gly Asp Cys Ala Thr Val  
2500 2505 2510

His Thr Ala Asn Lys Trp Asp Leu Ile Ile Ser Asp Met Tyr Asp Pro  
2515 2520 2525

Arg Thr Lys His Val Thr Lys Glu Asn Asp Ser Lys Glu Gly Phe Phe  
2530 2535 2540

Thr Tyr Leu Cys Gly Phe Ile Lys Gln Lys Leu Ala Leu Gly Gly Ser  
2545 2550 2555 2560

Ile Ala Val Lys Ile Thr Glu His Ser Trp Asn Ala Asp Leu Tyr Lys  
2565 2570 2575

Leu Met Gly His Phe Ser Trp Trp Thr Ala Phe Val Thr Asn Val Asn  
2580 2585 2590

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Ala Ser Ser Ser Glu Ala Phe Leu Ile Gly Ala Asn Tyr Leu Gly Lys  
 2595 2600 2605  
 Pro Lys Glu Gln Ile Asp Gly Tyr Thr Met His Ala Asn Tyr Ile Phe  
 2610 2615 2620  
 Trp Arg Asn Thr Asn Pro Ile Gln Leu Ser Ser Tyr Ser Leu Phe Asp  
 2625 2630 2635 2640  
 Met Ser Lys Phe Pro Leu Lys Leu Arg Gly Thr Ala Val Met Ser Leu  
 2645 2650 2655  
 Lys Glu Asn Gln Ile Asn Asp Met Ile Tyr Ser Leu Leu Glu Lys Gly  
 2660 2665 2670  
 Arg Leu Ile Ile Arg Glu Asn Asn Arg Val Val Val Ser Ser Asp Ile  
 2675 2680 2685  
 Leu Val Asn Asn  
 2690

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 <222> 4376  
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 Ser Leu Pro Val Leu Gln Val Arg Asp Val Leu Val Arg Gly Phe Gly  
 20 25 30  
 Asp Ser Val Glu Glu Ala Leu Ser Glu Ala Arg Glu His Leu Lys Asn  
 35 40 45  
 Gly Thr Cys Gly Leu Val Glu Leu Glu Lys Gly Val Leu Pro Gln Leu  
 50 55 60  
 Glu Gln Pro Tyr Val Phe Ile Lys Arg Ser Asp Ala Leu Ser Thr Asn  
 65 70 75 80  
 His Gly His Lys Val Val Glu Leu Val Ala Glu Met Asp Gly Ile Gln  
 85 90 95  
 Tyr Gly Arg Ser Gly Ile Thr Leu Gly Val Leu Val Pro His Val Gly  
 100 105 110  
 Glu Thr Pro Ile Ala Tyr Arg Asn Val Leu Leu Arg Lys Asn Gly Asn  
 115 120 125  
 Lys Gly Ala Gly Gly His Ser Tyr Gly Ile Asp Leu Lys Ser Tyr Asp  
 130 135 140  
 Leu Gly Asp Glu Leu Gly Thr Asp Pro Ile Glu Asp Tyr Glu Gln Asn  
 145 150 155 160  
 Trp Asn Thr Lys His Gly Ser Gly Ala Leu Arg Glu Leu Thr Arg Glu

## 175

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## 845

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1180

1170

1175

Pro Asn Thr Glu Asp Ser Lys Thr Glu Glu Lys Ser Val Val Gln Lys  
1185 1190 1195 1200

Pro Val Asp Val Lys Pro Lys Ile Lys Ala Cys Ile Asp Glu Val Thr  
1205 1210 1215

Thr Thr Leu Glu Glu Thr Lys Phe Leu Thr Asn Lys Leu Leu Leu Phe  
1220 1225 1230

Ala Asp Ile Asn Gly Lys Leu Tyr His Asp Ser Gln Asn Met Leu Arg  
1235 1240 1245

Gly Glu Asp Met Ser Phe Leu Glu Lys Asp Ala Pro Tyr Met Val Gly  
1250 1255 1260

Asp Val Ile Thr Ser Gly Asp Ile Thr Cys Val Val Ile Pro Ser Lys  
1265 1270 1275 1280

Lys Ala Gly Gly Thr Thr Glu Met Leu Ser Arg Ala Leu Lys Lys Val  
1285 1290 1295

Pro Val Asp Glu Tyr Ile Thr Thr Tyr Pro Gly Gln Gly Cys Ala Gly  
1300 1305 1310

Tyr Thr Leu Glu Glu Ala Lys Thr Ala Leu Lys Lys Cys Lys Ser Ala  
1315 1320 1325

Phe Tyr Val Leu Pro Ser Glu Ala Pro Asn Ala Lys Glu Glu Ile Leu  
1330 1335 1340

Gly Thr Val Ser Trp Asn Leu Arg Glu Met Leu Ala His Ala Glu Glu  
1345 1350 1355 1360

Thr Arg Lys Leu Met Pro Ile Cys Met Asp Val Arg Ala Ile Met Ala  
1365 1370 1375

Thr Ile Gln Arg Lys Tyr Lys Gly Ile Lys Ile Gln Glu Gly Ile Val  
1380 1385 1390

Asp Tyr Gly Val Arg Phe Phe Phe Tyr Thr Ser Lys Glu Pro Val Ala  
1395 1400 1405

Ser Ile Ile Thr Lys Leu Asn Ser Leu Asn Glu Pro Leu Val Thr Met  
1410 1415 1420

Pro Ile Gly Tyr Val Thr His Gly Phe Asn Leu Glu Glu Ala Ala Arg  
1425 1430 1435 1440

Cys Met Arg Ser Leu Lys Ala Pro Ala Val Val Ser Val Ser Ser Pro  
1445 1450 1455

Asp Ala Val Thr Thr Tyr Asn Gly Tyr Leu Thr Ser Ser Ser Lys Thr  
1460 1465 1470

Ser Glu Glu His Phe Val Glu Thr Val Ser Leu Ala Gly Ser Tyr Arg  
1475 1480 1485

Asp Trp Ser Tyr Ser Gly Gln Arg Thr Glu Leu Gly Val Glu Phe Leu  
1490 1495 1500

Lys Arg Gly Asp Lys Ile Val Tyr His Thr Leu Glu Ser Pro Val Glu

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1505                      1510                      1515                      1520  
 Phe His Leu Asp Gly Glu Val Leu Ser Leu Asp Lys Leu Lys Ser Leu  
                                  1525                      1530                      1535  
 Leu Ser Leu Arg Glu Val Lys Thr Ile Lys Val Phe Thr Thr Val Asp  
                                  1540                      1545                      1550  
 Asn Thr Asn Leu His Thr Gln Leu Val Asp Met Ser Met Thr Tyr Gly  
                                  1555                      1560                      1565  
 Gln Gln Phe Gly Pro Thr Tyr Leu Asp Gly Ala Asp Val Thr Lys Ile  
                                  1570                      1575                      1580  
 Lys Pro His Val Asn His Glu Gly Lys Thr Phe Phe Val Leu Pro Ser  
 1585                      1590                      1595                      1600  
 Asp Asp Thr Leu Arg Ser Glu Ala Phe Glu Tyr Tyr His Thr Leu Asp  
                                  1605                      1610                      1615  
 Glu Ser Phe Leu Gly Arg Tyr Met Ser Ala Leu Asn His Thr Lys Lys  
                                  1620                      1625                      1630  
 Trp Lys Phe Pro Gln Val Gly Gly Leu Thr Ser Ile Lys Trp Ala Asp  
                                  1635                      1640                      1645  
 Asn Asn Cys Tyr Leu Ser Ser Val Leu Leu Ala Leu Gln Gln Leu Glu  
                                  1650                      1655                      1660  
 Val Lys Phe Asn Ala Pro Ala Leu Gln Glu Ala Tyr Tyr Arg Ala Arg  
 1665                      1670                      1675                      1680  
 Ala Gly Asp Ala Ala Asn Phe Cys Ala Leu Ile Leu Ala Tyr Ser Asn  
                                  1685                      1690                      1695  
 Lys Thr Val Gly Glu Leu Gly Asp Val Arg Glu Thr Met Thr His Leu  
                                  1700                      1705                      1710  
 Leu Gln His Ala Asn Leu Glu Ser Ala Lys Arg Val Leu Asn Val Val  
                                  1715                      1720                      1725  
 Cys Lys His Cys Gly Gln Lys Thr Thr Thr Leu Thr Gly Val Glu Ala  
                                  1730                      1735                      1740  
 Val Met Tyr Met Gly Thr Leu Ser Tyr Asp Asn Leu Lys Thr Gly Val  
 1745                      1750                      1755                      1760  
 Ser Ile Pro Cys Val Cys Gly Arg Asp Ala Thr Gln Tyr Leu Val Gln  
                                  1765                      1770                      1775  
 Gln Glu Ser Ser Phe Val Met Met Ser Ala Pro Pro Ala Glu Tyr Lys  
                                  1780                      1785                      1790  
 Leu Gln Gln Gly Thr Phe Leu Cys Ala Asn Glu Tyr Thr Gly Asn Tyr  
                                  1795                      1800                      1805  
 Gln Cys Gly His Tyr Thr His Ile Thr Ala Lys Glu Thr Leu Tyr Arg  
                                  1810                      1815                      1820  
 Ile Asp Gly Ala His Leu Thr Lys Met Ser Glu Tyr Lys Gly Pro Val  
 1825                      1830                      1835                      1840  
 Thr Asp Val Phe Tyr Lys Glu Thr Ser Tyr Thr Thr Thr Ile Lys Pro

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1845		1850		1855
Val Ser Tyr	Lys 1860	Leu Asp Gly Val	Thr Tyr Thr Glu Ile	Glu 1870 Pro Lys
Leu Asp Gly	Tyr Tyr Lys Lys	Asp 1880 Asn Ala Tyr Tyr	Thr 1885 Glu Gln Pro	
Ile Asp Leu	Val Pro Thr	Gln 1895 Pro Leu Pro	Asn 1900 Ala Ser Phe	Asp Asn
Phe Lys Leu	Thr Cys 1910	Ser Asn Thr Lys Phe	Ala 1915 Asp Asp Leu	Asn Gln 1920
Met Thr Gly	Phe Thr 1925	Lys Pro Ala Ser Arg	Glu 1930 Leu Ser Val	Thr Phe 1935
Phe Pro Asp	Leu Asn Gly Asp	Val 1945 Val Ala Ile	Asp Tyr Arg His	Tyr 1950
Ser Ala Ser	Phe Lys Lys Gly	Ala 1960 Lys Leu Leu	His Lys 1965	Pro Ile Val
Trp His Ile	Asn Gln Ala Thr	Thr 1975 Lys Thr Thr	Phe 1980 Lys Pro	Asn Thr
Trp Cys Leu	Arg Cys 1990	Leu Trp Ser Thr Lys	Pro 1995 Val Asp Thr	Ser Asn 2000
Ser Phe Glu	Val Leu Ala Val	Glu Asp Thr 2010	Gln Gly Met Asp	Asn Leu 2015
Ala Cys Glu	Ser Gln Gln Pro	Thr 2025 Ser Glu Glu	Val 2030 Val Glu	Asn Pro
Thr Ile Gln	Lys Glu Val Ile	Glu 2040 Cys Asp Val	Lys 2045 Thr Thr	Glu Val
Val Gly Asn	Val Ile Leu Lys	Pro 2055 Ser Asp Glu	Gly 2060 Val Lys	Val Thr
Gln Glu Leu	Gly His Glu Asp	Leu 2070 Met Ala Ala	Tyr 2075 Val Glu	Asn Thr 2080
Ser Ile Thr	Ile Lys 2085	Lys Pro Asn Glu	Leu 2090 Ser Leu	Ala Leu Gly 2095
Lys Thr Ile	Ala Thr 2100	His Gly Ile Ala	Ala 2105 Ile Asn	Ser Val 2110
Ser Lys Ile	Leu Ala Tyr Val	Lys 2120 Pro Phe Leu	Gly 2125 Gln Ala	Ala Ile
Thr Thr Ser	Asn Cys Ala Lys	Arg 2135 Leu Ala Gln	Arg 2140 Val Phe	Asn Asn
Tyr Met Pro	Tyr Val Phe Thr	Leu 2150 Leu Phe Gln	Leu 2155 Cys Thr	Phe Thr 2160
Lys Ser Thr	Asn Ser Arg Ile	Arg Ala Ser 2170	Leu Pro Thr Thr	Ile Ala 2175
Lys Asn Ser	Val Lys Ser Val	Ala Lys Leu Cys	Leu Asp Ala Gly	Ile

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2180

2185

2190

Asn Tyr Val Lys Ser Pro Lys Phe Ser Lys Leu Phe Thr Ile Ala Met  
 2195 2200 2205  
 Trp Leu Leu Leu Leu Ser Ile Cys Leu Gly Ser Leu Ile Cys Val Thr  
 2210 2215 2220  
 Ala Ala Phe Gly Val Leu Leu Ser Asn Phe Gly Ala Pro Ser Tyr Cys  
 2225 2230 2235 2240  
 Asn Gly Val Arg Glu Leu Tyr Leu Asn Ser Ser Asn Val Thr Thr Met  
 2245 2250 2255  
 Asp Phe Cys Glu Gly Ser Phe Pro Cys Ser Ile Cys Leu Ser Gly Leu  
 2260 2265 2270  
 Asp Ser Leu Asp Ser Tyr Pro Ala Leu Glu Thr Ile Gln Val Thr Ile  
 2275 2280 2285  
 Ser Ser Tyr Lys Leu Asp Leu Thr Ile Leu Gly Leu Ala Ala Glu Trp  
 2290 2295 2300  
 Val Leu Ala Tyr Met Leu Phe Thr Lys Phe Phe Tyr Leu Leu Gly Leu  
 2305 2310 2315 2320  
 Ser Ala Ile Met Gln Val Phe Phe Gly Tyr Phe Ala Ser His Phe Ile  
 2325 2330 2335  
 Ser Asn Ser Trp Leu Met Trp Phe Ile Ile Ser Ile Val Gln Met Ala  
 2340 2345 2350  
 Pro Val Ser Ala Met Val Arg Met Tyr Ile Phe Phe Ala Ser Phe Tyr  
 2355 2360 2365  
 Tyr Ile Trp Lys Ser Tyr Val His Ile Met Asp Gly Cys Thr Ser Ser  
 2370 2375 2380  
 Thr Cys Met Met Cys Tyr Lys Arg Asn Arg Ala Thr Arg Val Glu Cys  
 2385 2390 2395 2400  
 Thr Thr Ile Val Asn Gly Met Lys Arg Ser Phe Tyr Val Tyr Ala Asn  
 2405 2410 2415  
 Gly Gly Arg Gly Phe Cys Lys Thr His Asn Trp Asn Cys Leu Asn Cys  
 2420 2425 2430  
 Asp Thr Phe Cys Thr Gly Ser Thr Phe Ile Ser Asp Glu Val Ala Arg  
 2435 2440 2445  
 Asp Leu Ser Leu Gln Phe Lys Arg Pro Ile Asn Pro Thr Asp Gln Ser  
 2450 2455 2460  
 Ser Tyr Ile Val Asp Ser Val Ala Val Lys Asn Gly Ala Leu His Leu  
 2465 2470 2475 2480  
 Tyr Phe Asp Lys Ala Gly Gln Lys Thr Tyr Glu Arg His Pro Leu Ser  
 2485 2490 2495  
 His Phe Val Asn Leu Asp Asn Leu Arg Ala Asn Asn Thr Lys Gly Ser  
 2500 2505 2510  
 Leu Pro Ile Asn Val Ile Val Phe Asp Gly Lys Ser Lys Cys Asp Glu

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2515                      2520                      2525  
 Ser Ala Ser Lys Ser Ala Ser Val Tyr Tyr Ser Gln Leu Met Cys Gln  
 2530                      2535                      2540  
 Pro Ile Leu Leu Leu Asp Gln Ala Leu Val Ser Asp Val Gly Asp Ser  
 2545                      2550                      2555                      2560  
 Thr Glu Val Ser Val Lys Met Phe Asp Ala Tyr Val Asp Thr Phe Ser  
 2565                      2570                      2575  
 Ala Thr Phe Ser Val Pro Met Glu Lys Leu Lys Ala Leu Val Ala Thr  
 2580                      2585                      2590  
 Ala His Ser Glu Leu Ala Lys Gly Val Ala Leu Asp Gly Val Leu Ser  
 2595                      2600                      2605  
 Thr Phe Val Ser Ala Ala Arg Gln Gly Val Val Asp Thr Asp Val Asp  
 2610                      2615                      2620  
 Thr Lys Asp Val Ile Glu Cys Leu Lys Leu Ser His His Ser Asp Leu  
 2625                      2630                      2635                      2640  
 Glu Val Thr Gly Asp Ser Cys Asn Asn Phe Met Leu Thr Tyr Asn Lys  
 2645                      2650                      2655  
 Val Glu Asn Met Thr Pro Arg Asp Leu Gly Ala Cys Ile Asp Cys Asn  
 2660                      2665                      2670  
 Ala Arg His Ile Asn Ala Gln Val Ala Lys Ser His Asn Val Ser Leu  
 2675                      2680                      2685  
 Ile Trp Asn Val Lys Asp Tyr Met Ser Leu Ser Glu Gln Leu Arg Lys  
 2690                      2695                      2700  
 Gln Ile Arg Ser Ala Ala Lys Lys Asn Asn Ile Pro Phe Arg Leu Thr  
 2705                      2710                      2715                      2720  
 Cys Ala Thr Thr Arg Gln Val Val Asn Val Ile Thr Thr Lys Ile Ser  
 2725                      2730                      2735  
 Leu Lys Gly Gly Lys Ile Val Ser Thr Cys Phe Lys Leu Met Leu Lys  
 2740                      2745                      2750  
 Ala Thr Leu Leu Cys Val Leu Ala Ala Leu Val Cys Tyr Ile Val Met  
 2755                      2760                      2765  
 Pro Val His Thr Leu Ser Ile His Asp Gly Tyr Thr Asn Glu Ile Ile  
 2770                      2775                      2780  
 Gly Tyr Lys Ala Ile Gln Asp Gly Val Thr Arg Asp Ile Ile Ser Thr  
 2785                      2790                      2795                      2800  
 Asp Asp Cys Phe Ala Asn Lys His Ala Gly Phe Asp Ala Trp Phe Ser  
 2805                      2810                      2815  
 Gln Arg Gly Gly Ser Tyr Lys Asn Asp Lys Ser Cys Pro Val Val Ala  
 2820                      2825                      2830  
 Ala Ile Ile Thr Arg Glu Ile Gly Phe Ile Val Pro Gly Leu Pro Gly  
 2835                      2840                      2845  
 Thr Val Leu Arg Ala Ile Asn Gly Asp Phe Leu His Phe Leu Pro Arg

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2850		2855		2860	
Val Phe Ser Ala Val	Gly Asn Ile Cys Tyr Thr Pro Ser Lys Leu Ile				
2865	2870		2875		2880
Glu Tyr Ser Asp Phe Ala Thr Ser Ala Cys Val Leu Ala Ala Glu Cys					
	2885		2890		2895
Thr Ile Phe Lys Asp Ala Met Gly Lys Pro Val Pro Tyr Cys Tyr Asp					
	2900		2905		2910
Thr Asn Leu Leu Glu Gly Ser Ile Ser Tyr Ser Glu Leu Arg Pro Asp					
	2915		2920		2925
Thr Arg Tyr Val Leu Met Asp Gly Ser Ile Ile Gln Phe Pro Asn Thr					
	2930		2935		2940
Tyr Leu Glu Gly Ser Val Arg Val Val Thr Thr Phe Asp Ala Glu Tyr					
	2945		2950		2955
Cys Arg His Gly Thr Cys Glu Arg Ser Glu Val Gly Ile Cys Leu Ser					
	2965		2970		2975
Thr Ser Gly Arg Trp Val Leu Asn Asn Glu His Tyr Arg Ala Leu Ser					
	2980		2985		2990
Gly Val Phe Cys Gly Val Asp Ala Met Asn Leu Ile Ala Asn Ile Phe					
	2995		3000		3005
Thr Pro Leu Val Gln Pro Val Gly Ala Leu Asp Val Ser Ala Ser Val					
	3010		3015		3020
Val Ala Gly Gly Ile Ile Ala Ile Leu Val Thr Cys Ala Ala Tyr Tyr					
	3025		3030		3035
Phe Met Lys Phe Arg Arg Val Phe Gly Glu Tyr Asn His Val Val Ala					
	3045		3050		3055
Ala Asn Ala Leu Leu Phe Leu Met Ser Phe Thr Ile Leu Cys Leu Val					
	3060		3065		3070
Pro Ala Tyr Ser Phe Leu Pro Gly Val Tyr Ser Val Phe Tyr Leu Tyr					
	3075		3080		3085
Leu Thr Phe Tyr Phe Thr Asn Asp Val Ser Phe Leu Ala His Leu Gln					
	3090		3095		3100
Trp Phe Ala Met Phe Ser Pro Ile Val Pro Phe Trp Ile Thr Ala Ile					
	3105		3110		3115
Tyr Val Phe Cys Ile Ser Leu Lys His Cys His Trp Phe Phe Asn Asn					
	3125		3130		3135
Tyr Leu Arg Lys Arg Val Met Phe Asn Gly Val Thr Phe Ser Thr Phe					
	3140		3145		3150
Glu Glu Ala Ala Leu Cys Thr Phe Leu Leu Asn Lys Glu Met Tyr Leu					
	3155		3160		3165
Lys Leu Arg Ser Glu Thr Leu Leu Pro Leu Thr Gln Tyr Asn Arg Tyr					
	3170		3175		3180
Leu Ala Leu Tyr Asn Lys Tyr Lys Tyr Phe Ser Gly Ala Leu Asp Thr					

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3185                      3190                      3195                      3200

Thr Ser Tyr Arg Glu Ala Ala Cys Cys His Leu Ala Lys Ala Leu Asn  
                                 3205                                   3210                                   3215

Asp Phe Ser Asn Ser Gly Ala Asp Val Leu Tyr Gln Pro Pro Gln Thr  
                                 3220                                   3225                                   3230

Ser Ile Thr Ser Ala Val Leu Gln Ser Gly Phe Arg Lys Met Ala Phe  
                                 3235                                   3240                                   3245

Pro Ser Gly Lys Val Glu Gly Cys Met Val Gln Val Thr Cys Gly Thr  
                                 3250                                   3255                                   3260

Thr Thr Leu Asn Gly Leu Trp Leu Asp Asp Thr Val Tyr Cys Pro Arg  
3265                                   3270                                   3275                                   3280

His Val Ile Cys Thr Ala Glu Asp Met Leu Asn Pro Asn Tyr Glu Asp  
                                 3285                                   3290                                   3295

Leu Leu Ile Arg Lys Ser Asn His Ser Phe Leu Val Gln Ala Gly Asn  
                                 3300                                   3305                                   3310

Val Gln Leu Arg Val Ile Gly His Ser Met Gln Asn Cys Leu Leu Arg  
                                 3315                                   3320                                   3325

Leu Lys Val Asp Thr Ser Asn Pro Lys Thr Pro Lys Tyr Lys Phe Val  
                                 3330                                   3335                                   3340

Arg Ile Gln Pro Gly Gln Thr Phe Ser Val Leu Ala Cys Tyr Asn Gly  
3345                                   3350                                   3355                                   3360

Ser Pro Ser Gly Val Tyr Gln Cys Ala Met Arg Pro Asn His Thr Ile  
                                 3365                                   3370                                   3375

Lys Gly Ser Phe Leu Asn Gly Ser Cys Gly Ser Val Gly Phe Asn Ile  
                                 3380                                   3385                                   3390

Asp Tyr Asp Cys Val Ser Phe Cys Tyr Met His His Met Glu Leu Pro  
                                 3395                                   3400                                   3405

Thr Gly Val His Ala Gly Thr Asp Leu Glu Gly Lys Phe Tyr Gly Pro  
                                 3410                                   3415                                   3420

Phe Val Asp Arg Gln Thr Ala Gln Ala Ala Gly Thr Asp Thr Thr Ile  
3425                                   3430                                   3435                                   3440

Thr Leu Asn Val Leu Ala Trp Leu Tyr Ala Ala Val Ile Asn Gly Asp  
                                 3445                                   3450                                   3455

Arg Trp Phe Leu Asn Arg Phe Thr Thr Thr Leu Asn Asp Phe Asn Leu  
                                 3460                                   3465                                   3470

Val Ala Met Lys Tyr Asn Tyr Glu Pro Leu Thr Gln Asp His Val Asp  
                                 3475                                   3480                                   3485

Ile Leu Gly Pro Leu Ser Ala Gln Thr Gly Ile Ala Val Leu Asp Met  
                                 3490                                   3495                                   3500

Cys Ala Ala Leu Lys Glu Leu Leu Gln Asn Gly Met Asn Gly Arg Thr  
3505                                   3510                                   3515                                   3520

Ile Leu Gly Ser Thr Ile Leu Glu Asp Glu Phe Thr Pro Phe Asp Val



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3525		3530		3535
Val Arg Gln Cys Ser Gly Val Thr Phe Gln Gly Lys Phe Lys Lys Ile	3540	3545		3550
Val Lys Gly Thr His His Trp Met Leu Leu Thr Phe Leu Thr Ser Leu	3555	3560		3565
Leu Ile Leu Val Gln Ser Thr Gln Trp Ser Leu Phe Phe Phe Val Tyr	3570	3575		3580
Glu Asn Ala Phe Leu Pro Phe Thr Leu Gly Ile Met Ala Ile Ala Ala	3585	3590		3595
Cys Ala Met Leu Leu Val Lys His Lys His Ala Phe Leu Cys Leu Phe	3605	3610		3615
Leu Leu Pro Ser Leu Ala Thr Val Ala Tyr Phe Asn Met Val Tyr Met	3620	3625		3630
Pro Ala Ser Trp Val Met Arg Ile Met Thr Trp Leu Glu Leu Ala Asp	3635	3640		3645
Thr Ser Leu Ser Gly Tyr Arg Leu Lys Asp Cys Val Met Tyr Ala Ser	3650	3655		3660
Ala Leu Val Leu Leu Ile Leu Met Thr Ala Arg Thr Val Tyr Asp Asp	3665	3670		3675
Ala Ala Arg Arg Val Trp Thr Leu Met Asn Val Ile Thr Leu Val Tyr	3685	3690		3695
Lys Val Tyr Tyr Gly Asn Ala Leu Asp Gln Ala Ile Ser Met Trp Ala	3700	3705		3710
Leu Val Ile Ser Val Thr Ser Asn Tyr Ser Gly Val Val Thr Thr Ile	3715	3720		3725
Met Phe Leu Ala Arg Ala Ile Val Phe Val Cys Val Glu Tyr Tyr Pro	3730	3735		3740
Leu Leu Phe Ile Thr Gly Asn Thr Leu Gln Cys Ile Met Leu Val Tyr	3745	3750		3755
Cys Phe Leu Gly Tyr Cys Cys Cys Cys Tyr Phe Gly Leu Phe Cys Leu	3765	3770		3775
Leu Asn Arg Tyr Phe Arg Leu Thr Leu Gly Val Tyr Asp Tyr Leu Val	3780	3785		3790
Ser Thr Gln Glu Phe Arg Tyr Met Asn Ser Gln Gly Leu Leu Pro Pro	3795	3800		3805
Lys Ser Ser Ile Asp Ala Phe Lys Leu Asn Ile Lys Leu Leu Gly Ile	3810	3815		3820
Gly Gly Lys Pro Cys Ile Lys Val Ala Thr Val Gln Ser Lys Met Ser	3825	3830		3835
Asp Val Lys Cys Thr Ser Val Val Leu Leu Ser Val Leu Gln Gln Leu	3845	3850		3855
Arg Val Glu Ser Ser Ser Lys Leu Trp Ala Gln Cys Val Gln Leu His				

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3860 3865 3870  
 Asn Asp Ile Leu Leu Ala Lys Asp Thr Thr Glu Ala Phe Glu Lys Met  
 3875 3880 3885  
 Val Ser Leu Leu Ser Val Leu Leu Ser Met Gln Gly Ala Val Asp Ile  
 3890 3895 3900  
 Asn Arg Leu Cys Glu Glu Met Leu Asp Asn Arg Ala Thr Leu Gln Ala  
 3905 3910 3915 3920  
 Ile Ala Ser Glu Phe Ser Ser Leu Pro Ser Tyr Ala Ala Tyr Ala Thr  
 3925 3930 3935  
 Ala Gln Glu Ala Tyr Glu Gln Ala Val Ala Asn Gly Asp Ser Glu Val  
 3940 3945 3950  
 Val Leu Lys Lys Leu Lys Lys Ser Leu Asn Val Ala Lys Ser Glu Phe  
 3955 3960 3965  
 Asp Arg Asp Ala Ala Met Gln Arg Lys Leu Glu Lys Met Ala Asp Gln  
 3970 3975 3980  
 Ala Met Thr Gln Met Tyr Lys Gln Ala Arg Ser Glu Asp Lys Arg Ala  
 3985 3990 3995 4000  
 Lys Val Thr Ser Ala Met Gln Thr Met Leu Phe Thr Met Leu Arg Lys  
 4005 4010 4015  
 Leu Asp Asn Asp Ala Leu Asn Asn Ile Ile Asn Asn Ala Arg Asp Gly  
 4020 4025 4030  
 Cys Val Pro Leu Asn Ile Ile Pro Leu Thr Thr Ala Ala Lys Leu Met  
 4035 4040 4045  
 Val Val Val Pro Asp Tyr Gly Thr Tyr Lys Asn Thr Cys Asp Gly Asn  
 4050 4055 4060  
 Thr Phe Thr Tyr Ala Ser Ala Leu Trp Glu Ile Gln Gln Val Val Asp  
 4065 4070 4075 4080  
 Ala Asp Ser Lys Ile Val Gln Leu Ser Glu Ile Asn Met Asp Asn Ser  
 4085 4090 4095  
 Pro Asn Leu Ala Trp Pro Leu Ile Val Thr Ala Leu Arg Ala Asn Ser  
 4100 4105 4110  
 Ala Val Lys Leu Gln Asn Asn Glu Leu Ser Pro Val Ala Leu Arg Gln  
 4115 4120 4125  
 Met Ser Cys Ala Ala Gly Thr Thr Gln Thr Ala Cys Thr Asp Asp Asn  
 4130 4135 4140  
 Ala Leu Ala Tyr Tyr Asn Asn Ser Lys Gly Gly Arg Phe Val Leu Ala  
 4145 4150 4155 4160  
 Leu Leu Ser Asp His Gln Asp Leu Lys Trp Ala Arg Phe Pro Lys Ser  
 4165 4170 4175  
 Asp Gly Thr Gly Thr Ile Tyr Thr Glu Leu Glu Pro Pro Cys Arg Phe  
 4180 4185 4190  
 Val Thr Asp Thr Pro Lys Gly Pro Lys Val Lys Tyr Leu Tyr Phe Ile

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4195	4200	4205
Lys Gly Leu Asn Asn Leu Asn Arg Gly Met Val Leu Gly Ser Leu Ala		
4210	4215	4220
Ala Thr Val Arg Leu Gln Ala Gly Asn Ala Thr Glu Val Pro Ala Asn		
4225	4230	4235
Ser Thr Val Leu Ser Phe Cys Ala Phe Ala Val Asp Pro Ala Lys Ala		
4245	4250	4255
Tyr Lys Asp Tyr Leu Ala Ser Gly Gly Gln Pro Ile Thr Asn Cys Val		
4260	4265	4270
Lys Met Leu Cys Thr His Thr Gly Thr Gly Gln Ala Ile Thr Val Thr		
4275	4280	4285
Pro Glu Ala Asn Met Asp Gln Glu Ser Phe Gly Gly Ala Ser Cys Cys		
4290	4295	4300
Leu Tyr Cys Arg Cys His Ile Asp His Pro Asn Pro Lys Gly Phe Cys		
4305	4310	4315
Asp Leu Lys Gly Lys Tyr Val Gln Ile Pro Thr Thr Cys Ala Asn Asp		
4325	4330	4335
Pro Val Gly Phe Thr Leu Arg Asn Thr Val Cys Thr Val Cys Gly Met		
4340	4345	4350
Trp Lys Gly Tyr Gly Cys Ser Cys Asp Gln Leu Arg Glu Pro Leu Met		
4355	4360	4365
Gln Ser Ala Asp Ala Ser Thr Xaa Gly Val Ser Ala Ala Arg Leu Thr		
4370	4375	4380
Pro Cys Gly Thr Gly Thr Ser Thr Asp Val Val Tyr Arg Ala Phe Asp		
4385	4390	4395
Ile Tyr Asn Glu Lys Val Ala Gly Phe Ala Lys Phe Leu Lys Thr Asn		
4405	4410	4415
Cys Cys Arg Phe Gln Glu Lys Asp Glu Glu Gly Asn Leu Leu Asp Ser		
4420	4425	4430
Tyr Phe Val Val Lys Arg His Thr Met Ser Asn Tyr Gln His Glu Glu		
4435	4440	4445
Thr Ile Tyr Asn Leu Val Lys Asp Cys Pro Ala Val Ala Val His Asp		
4450	4455	4460
Phe Phe Lys Phe Arg Val Asp Gly Asp Met Val Pro His Ile Ser Arg		
4465	4470	4475
Gln Arg Leu Thr Lys Tyr Thr Met Ala Asp Leu Val Tyr Ala Leu Arg		
4485	4490	4495
His Phe Asp Glu Gly Asn Cys Asp Thr Leu Lys Glu Ile Leu Val Thr		
4500	4505	4510
Tyr Asn Cys Cys Asp Asp Asp Tyr Phe Asn Lys Lys Asp Trp Tyr Asp		
4515	4520	4525
Phe Val Glu Asn Pro Asp Ile Leu Arg Val Tyr Ala Asn Leu Gly Glu		

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4530                      4535                      4540  
 Arg Val Arg Gln Ser Leu Leu Lys Thr Val Gln Phe Cys Asp Ala Met  
 4545                      4550                      4555                      4560  
 Arg Asp Ala Gly Ile Val Gly Val Leu Thr Leu Asp Asn Gln Asp Leu  
                                  4565                      4570                      4575  
 Asn Gly Asn Trp Tyr Asp Phe Gly Asp Phe Val Gln Val Ala Pro Gly  
                                  4580                      4585                      4590  
 Cys Gly Val Pro Ile Val Asp Ser Tyr Tyr Ser Leu Leu Met Pro Ile  
                                  4595                      4600                      4605  
 Leu Thr Leu Thr Arg Ala Leu Ala Ala Glu Ser His Met Asp Ala Asp  
                                  4610                      4615                      4620  
 Leu Ala Lys Pro Leu Ile Lys Trp Asp Leu Leu Lys Tyr Asp Phe Thr  
 4625                      4630                      4635                      4640  
 Glu Glu Arg Leu Cys Leu Phe Asp Arg Tyr Phe Lys Tyr Trp Asp Gln  
                                  4645                      4650                      4655  
 Thr Tyr His Pro Asn Cys Ile Asn Cys Leu Asp Asp Arg Cys Ile Leu  
                                  4660                      4665                      4670  
 His Cys Ala Asn Phe Asn Val Leu Phe Ser Thr Val Phe Pro Pro Thr  
                                  4675                      4680                      4685  
 Ser Phe Gly Pro Leu Val Arg Lys Ile Phe Val Asp Gly Val Pro Phe  
                                  4690                      4695                      4700  
 Val Val Ser Thr Gly Tyr His Phe Arg Glu Leu Gly Val Val His Asn  
 4705                      4710                      4715                      4720  
 Gln Asp Val Asn Leu His Ser Ser Arg Leu Ser Phe Lys Glu Leu Leu  
                                  4725                      4730                      4735  
 Val Tyr Ala Ala Asp Pro Ala Met His Ala Ala Ser Gly Asn Leu Leu  
                                  4740                      4745                      4750  
 Leu Asp Lys Arg Thr Thr Cys Phe Ser Val Ala Ala Leu Thr Asn Asn  
                                  4755                      4760                      4765  
 Val Ala Phe Gln Thr Val Lys Pro Gly Asn Phe Asn Lys Asp Phe Tyr  
                                  4770                      4775                      4780  
 Asp Phe Ala Val Ser Lys Gly Phe Phe Lys Glu Gly Ser Ser Val Glu  
 4785                      4790                      4795                      4800  
 Leu Lys His Phe Phe Phe Ala Gln Asp Gly Asn Ala Ala Ile Ser Asp  
                                  4805                      4810                      4815  
 Tyr Asp Tyr Tyr Arg Tyr Asn Leu Pro Thr Met Cys Asp Ile Arg Gln  
                                  4820                      4825                      4830  
 Leu Leu Phe Val Val Glu Val Val Asp Lys Tyr Phe Asp Cys Tyr Asp  
                                  4835                      4840                      4845  
 Gly Gly Cys Ile Asn Ala Asn Gln Val Ile Val Asn Asn Leu Asp Lys  
 4850                      4855                      4860  
 Ser Ala Gly Phe Pro Phe Asn Lys Trp Gly Lys Ala Arg Leu Tyr Tyr

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4865                      4870                      4875                      4880  
 Asp Ser Met Ser Tyr Glu Asp Gln Asp Ala Leu Phe Ala Tyr Thr Lys  
                                  4885                      4890                      4895  
 Arg Asn Val Ile Pro Thr Ile Thr Gln Met Asn Leu Lys Tyr Ala Ile  
                                  4900                      4905                      4910  
 Ser Ala Lys Asn Arg Ala Arg Thr Val Ala Gly Val Ser Ile Cys Ser  
                                  4915                      4920                      4925  
 Thr Met Thr Asn Arg Gln Phe His Gln Lys Leu Leu Lys Ser Ile Ala  
                                  4930                      4935                      4940  
 Ala Thr Arg Gly Ala Thr Val Val Ile Gly Thr Ser Lys Phe Tyr Gly  
 4945                      4950                      4955                      4960  
 Gly Trp His Asn Met Leu Lys Thr Val Tyr Ser Asp Val Glu Thr Pro  
                                  4965                      4970                      4975  
 His Leu Met Gly Trp Asp Tyr Pro Lys Cys Asp Arg Ala Met Pro Asn  
                                  4980                      4985                      4990  
 Met Leu Arg Ile Met Ala Ser Leu Val Leu Ala Arg Lys His Asn Thr  
                                  4995                      5000                      5005  
 Cys Cys Asn Leu Ser His Arg Phe Tyr Arg Leu Ala Asn Glu Cys Ala  
 5010                      5015                      5020  
 Gln Val Leu Ser Glu Met Val Met Cys Gly Gly Ser Leu Tyr Val Lys  
 5025                      5030                      5035                      5040  
 Pro Gly Gly Thr Ser Ser Gly Asp Ala Thr Thr Ala Tyr Ala Asn Ser  
                                  5045                      5050                      5055  
 Val Phe Asn Ile Cys Gln Ala Val Thr Ala Asn Val Asn Ala Leu Leu  
                                  5060                      5065                      5070  
 Ser Thr Asp Gly Asn Lys Ile Ala Asp Lys Tyr Val Arg Asn Leu Gln  
                                  5075                      5080                      5085  
 His Arg Leu Tyr Glu Cys Leu Tyr Arg Asn Arg Asp Val Asp His Glu  
                                  5090                      5095                      5100  
 Phe Val Asp Glu Phe Tyr Ala Tyr Leu Arg Lys His Phe Ser Met Met  
 5105                      5110                      5115                      5120  
 Ile Leu Ser Asp Asp Ala Val Val Cys Tyr Asn Ser Asn Tyr Ala Ala  
                                  5125                      5130                      5135  
 Gln Gly Leu Val Ala Ser Ile Lys Asn Phe Lys Ala Val Leu Tyr Tyr  
                                  5140                      5145                      5150  
 Gln Asn Asn Val Phe Met Ser Glu Ala Lys Cys Trp Thr Glu Thr Asp  
                                  5155                      5160                      5165  
 Leu Thr Lys Gly Pro His Glu Phe Cys Ser Gln His Thr Met Leu Val  
                                  5170                      5175                      5180  
 Lys Gln Gly Asp Asp Tyr Val Tyr Leu Pro Tyr Pro Asp Pro Ser Arg  
 5185                      5190                      5195                      5200  
 Ile Leu Gly Ala Gly Cys Phe Val Asp Asp Ile Val Lys Thr Asp Gly

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5205  
 Thr Leu Met Ile Glu Arg Phe Val Ser Leu Ala Ile Asp Ala Tyr Pro  
 5220 5225 5230  
 Leu Thr Lys His Pro Asn Gln Glu Tyr Ala Asp Val Phe His Leu Tyr  
 5235 5240 5245  
 Leu Gln Tyr Ile Arg Lys Leu His Asp Glu Leu Thr Gly His Met Leu  
 5250 5255 5260  
 Asp Met Tyr Ser Val Met Leu Thr Asn Asp Asn Thr Ser Arg Tyr Trp  
 5265 5270 5275 5280  
 Glu Pro Glu Phe Tyr Glu Ala Met Tyr Thr Pro His Thr Val Leu Gln  
 5285 5290 5295  
 Ala Val Gly Ala Cys Val Leu Cys Asn Ser Gln Thr Ser Leu Arg Cys  
 5300 5305 5310  
 Gly Ala Cys Ile Arg Arg Pro Phe Leu Cys Cys Lys Cys Cys Tyr Asp  
 5315 5320 5325  
 His Val Ile Ser Thr Ser His Lys Leu Val Leu Ser Val Asn Pro Tyr  
 5330 5335 5340  
 Val Cys Asn Ala Pro Gly Cys Asp Val Thr Asp Val Thr Gln Leu Tyr  
 5345 5350 5355 5360  
 Leu Gly Gly Met Ser Tyr Tyr Cys Lys Ser His Lys Pro Pro Ile Ser  
 5365 5370 5375  
 Phe Pro Leu Cys Ala Asn Gly Gln Val Phe Gly Leu Tyr Lys Asn Thr  
 5380 5385 5390  
 Cys Val Gly Ser Asp Asn Val Thr Asp Phe Asn Ala Ile Ala Thr Cys  
 5395 5400 5405  
 Asp Trp Thr Asn Ala Gly Asp Tyr Ile Leu Ala Asn Thr Cys Thr Glu  
 5410 5415 5420  
 Arg Leu Lys Leu Phe Ala Ala Glu Thr Leu Lys Ala Thr Glu Glu Thr  
 5425 5430 5435 5440  
 Phe Lys Leu Ser Tyr Gly Ile Ala Thr Val Arg Glu Val Leu Ser Asp  
 5445 5450 5455  
 Arg Glu Leu His Leu Ser Trp Glu Val Gly Lys Pro Arg Pro Pro Leu  
 5460 5465 5470  
 Asn Arg Asn Tyr Val Phe Thr Gly Tyr Arg Val Thr Lys Asn Ser Lys  
 5475 5480 5485  
 Val Gln Ile Gly Glu Tyr Thr Phe Glu Lys Gly Asp Tyr Gly Asp Ala  
 5490 5495 5500  
 Val Val Tyr Arg Gly Thr Thr Thr Tyr Lys Leu Asn Val Gly Asp Tyr  
 5505 5510 5515 5520  
 Phe Val Leu Thr Ser His Thr Val Met Pro Leu Ser Ala Pro Thr Leu  
 5525 5530 5535  
 Val Pro Gln Glu His Tyr Val Arg Ile Thr Gly Leu Tyr Pro Thr Leu

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5540

5545

5550

Asn Ile Ser Asp Glu Phe Ser Ser Asn Val Ala Asn Tyr Gln Lys Val  
5555 5560 5565  
Gly Met Gln Lys Tyr Ser Thr Leu Gln Gly Pro Pro Gly Thr Gly Lys  
5570 5575 5580  
Ser His Phe Ala Ile Gly Leu Ala Leu Tyr Tyr Pro Ser Ala Arg Ile  
5585 5590 5600  
Val Tyr Thr Ala Cys Ser His Ala Ala Val Asp Ala Leu Cys Glu Lys  
5605 5610 5615  
Ala Leu Lys Tyr Leu Pro Ile Asp Lys Cys Ser Arg Ile Ile Pro Ala  
5620 5625 5630  
Arg Ala Arg Val Glu Cys Phe Asp Lys Phe Lys Val Asn Ser Thr Leu  
5635 5640 5645  
Glu Gln Tyr Val Phe Cys Thr Val Asn Ala Leu Pro Glu Thr Thr Ala  
5650 5655 5660  
Asp Ile Val Val Phe Asp Glu Ile Ser Met Ala Thr Asn Tyr Asp Leu  
5665 5670 5675 5680  
Ser Val Val Asn Ala Arg Leu Arg Ala Lys His Tyr Val Tyr Ile Gly  
5685 5690 5695  
Asp Pro Ala Gln Leu Pro Ala Pro Arg Thr Leu Leu Thr Lys Gly Thr  
5700 5705 5710  
Leu Glu Pro Glu Tyr Phe Asn Ser Val Cys Arg Leu Met Lys Thr Ile  
5715 5720 5725  
Gly Pro Asp Met Phe Leu Gly Thr Cys Arg Arg Cys Pro Ala Glu Ile  
5730 5735 5740  
Val Asp Thr Val Ser Ala Leu Val Tyr Asp Asn Lys Leu Lys Ala His  
5745 5750 5755 5760  
Lys Asp Lys Ser Ala Gln Cys Phe Lys Met Phe Tyr Lys Gly Val Ile  
5765 5770 5775  
Thr His Asp Val Ser Ser Ala Ile Asn Arg Pro Gln Ile Gly Val Val  
5780 5785 5790  
Arg Glu Phe Leu Thr Arg Asn Pro Ala Trp Arg Lys Ala Val Phe Ile  
5795 5800 5805  
Ser Pro Tyr Asn Ser Gln Asn Ala Val Ala Ser Lys Ile Leu Gly Leu  
5810 5815 5820  
Pro Thr Gln Thr Val Asp Ser Ser Gln Gly Ser Glu Tyr Asp Tyr Val  
5825 5830 5835 5840  
Ile Phe Thr Gln Thr Thr Glu Thr Ala His Ser Cys Asn Val Asn Arg  
5845 5850 5855  
Phe Asn Val Ala Ile Thr Arg Ala Lys Ile Gly Ile Leu Cys Ile Met  
5860 5865 5870  
Ser Asp Arg Asp Leu Tyr Asp Lys Leu Gln Phe Thr Ser Leu Glu Ile

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5875                      5880                      5885  
 Pro Arg Arg Asn Val Ala Thr Leu Gln Ala Glu Asn Val Thr Gly Leu  
     5890                      5895                      5900  
 Phe Lys Asp Cys Ser Lys Ile Ile Thr Gly Leu His Pro Thr Gln Ala  
     5905                      5910                      5915                      5920  
 Pro Thr His Leu Ser Val Asp Ile Lys Phe Lys Thr Glu Gly Leu Cys  
                     5925                      5930                      5935  
 Val Asp Ile Pro Gly Ile Pro Lys Asp Met Thr Tyr Arg Arg Leu Ile  
                     5940                      5945                      5950  
 Ser Met Met Gly Phe Lys Met Asn Tyr Gln Val Asn Gly Tyr Pro Asn  
                     5955                      5960                      5965  
 Met Phe Ile Thr Arg Glu Glu Ala Ile Arg His Val Arg Ala Trp Ile  
                     5970                      5975                      5980  
 Gly Phe Asp Val Glu Gly Cys His Ala Thr Arg Asp Ala Val Gly Thr  
     5985                      5990                      6000  
 Asn Leu Pro Leu Gln Leu Gly Phe Ser Thr Gly Val Asn Leu Val Ala  
                     6005                      6010                      6015  
 Val Pro Thr Gly Tyr Val Asp Thr Glu Asn Asn Thr Glu Phe Thr Arg  
                     6020                      6025                      6030  
 Val Asn Ala Lys Pro Pro Pro Gly Asp Gln Phe Lys His Leu Ile Pro  
                     6035                      6040                      6045  
 Leu Met Tyr Lys Gly Leu Pro Trp Asn Val Val Arg Ile Lys Ile Val  
                     6050                      6055                      6060  
 Gln Met Leu Ser Asp Thr Leu Lys Gly Leu Ser Asp Arg Val Val Phe  
     6065                      6070                      6075                      6080  
 Val Leu Trp Ala His Gly Phe Glu Leu Thr Ser Met Lys Tyr Phe Val  
                     6085                      6090                      6095  
 Lys Ile Gly Pro Glu Arg Thr Cys Cys Leu Cys Asp Lys Arg Ala Thr  
                     6100                      6105                      6110  
 Cys Phe Ser Thr Ser Ser Asp Thr Tyr Ala Cys Trp Asn His Ser Val  
                     6115                      6120                      6125  
 Gly Phe Asp Tyr Val Tyr Asn Pro Phe Met Ile Asp Val Gln Gln Trp  
                     6130                      6135                      6140  
 Gly Phe Thr Gly Asn Leu Gln Ser Asn His Asp Gln His Cys Gln Val  
     6145                      6150                      6155                      6160  
 His Gly Asn Ala His Val Ala Ser Cys Asp Ala Ile Met Thr Arg Cys  
                     6165                      6170                      6175  
 Leu Ala Val His Glu Cys Phe Val Lys Arg Val Asp Trp Ser Val Glu  
                     6180                      6185                      6190  
 Tyr Pro Ile Ile Gly Asp Glu Leu Arg Val Asn Ser Ala Cys Arg Lys  
                     6195                      6200                      6205  
 Val Gln His Met Val Val Lys Ser Ala Leu Leu Ala Asp Lys Phe Pro



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6210	6215	6220
Val Leu His Asp Ile	Gly Asn Pro Lys Ala Ile Lys Cys Val Pro Gln	
6225	6230	6235 6240
Ala Glu Val Glu Trp Lys Phe Tyr Asp	Ala Gln Pro Cys Ser Asp Lys	
	6245 6250 6255	
Ala Tyr Lys Ile Glu Glu Leu Phe Tyr Ser Tyr Ala Thr His His Asp		
	6260 6265 6270	
Lys Phe Thr Asp Gly Val Cys Leu Phe Trp Asn Cys Asn Val Asp Arg		
	6275 6280 6285	
Tyr Pro Ala Asn Ala Ile Val Cys Arg Phe Asp Thr Arg Val Leu Ser		
	6290 6295 6300	
Asn Leu Asn Leu Pro Gly Cys Asp Gly Gly Ser Leu Tyr Val Asn Lys		
6305	6310 6315 6320	
His Ala Phe His Thr Pro Ala Phe Asp Lys Ser Ala Phe Thr Asn Leu		
	6325 6330 6335	
Lys Gln Leu Pro Phe Phe Tyr Tyr Ser Asp Ser Pro Cys Glu Ser His		
	6340 6345 6350	
Gly Lys Gln Val Val Ser Asp Ile Asp Tyr Val Pro Leu Lys Ser Ala		
	6355 6360 6365	
Thr Cys Ile Thr Arg Cys Asn Leu Gly Gly Ala Val Cys Arg His His		
	6370 6375 6380	
Ala Asn Glu Tyr Arg Gln Tyr Leu Asp Ala Tyr Asn Met Met Ile Ser		
6385	6390 6395 6400	
Ala Gly Phe Ser Leu Trp Ile Tyr Lys Gln Phe Asp Thr Tyr Asn Leu		
	6405 6410 6415	
Trp Asn Thr Phe Thr Arg Leu Gln Ser Leu Glu Asn Val Ala Tyr Asn		
	6420 6425 6430	
Val Val Asn Lys Gly His Phe Asp Gly His Ala Gly Glu Ala Pro Val		
	6435 6440 6445	
Ser Ile Ile Asn Asn Ala Val Tyr Thr Lys Val Asp Gly Ile Asp Val		
	6450 6455 6460	
Glu Ile Phe Glu Asn Lys Thr Thr Leu Pro Val Asn Val Ala Phe Glu		
6465	6470 6475 6480	
Leu Trp Ala Lys Arg Asn Ile Lys Pro Val Pro Glu Ile Lys Ile Leu		
	6485 6490 6495	
Asn Asn Leu Gly Val Asp Ile Ala Ala Asn Thr Val Ile Trp Asp Tyr		
	6500 6505 6510	
Lys Arg Glu Ala Pro Ala His Val Ser Thr Ile Gly Val Cys Thr Met		
	6515 6520 6525	
Thr Asp Ile Ala Lys Lys Pro Thr Glu Ser Ala Cys Ser Ser Leu Thr		
	6530 6535 6540	
Val Leu Phe Asp Gly Arg Val Glu Gly Gln Val Asp Leu Phe Arg Asn		

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6545                      6550                      6555                      6560  
Ala Arg Asn Gly Val Leu Ile Thr Glu Gly Ser Val Lys Gly Leu Thr  
                                6565                      6570                      6575  
Pro Ser Lys Gly Pro Ala Gln Ala Ser Val Asn Gly Val Thr Leu Ile  
                                6580                      6585                      6590  
Gly Glu Ser Val Lys Thr Gln Phe Asn Tyr Phe Lys Lys Val Asp Gly  
                                6595                      6600                      6605  
Ile Ile Gln Gln Leu Pro Glu Thr Tyr Phe Thr Gln Ser Arg Asp Leu  
                                6610                      6615                      6620  
Glu Asp Phe Lys Pro Arg Ser Gln Met Glu Thr Asp Phe Leu Glu Leu  
6625                      6630                      6635                      6640  
Ala Met Asp Glu Phe Ile Gln Arg Tyr Lys Leu Glu Gly Tyr Ala Phe  
                                6645                      6650                      6655  
Glu His Ile Val Tyr Gly Asp Phe Ser His Gly Gln Leu Gly Gly Leu  
                                6660                      6665                      6670  
His Leu Met Ile Gly Leu Ala Lys Arg Ser Gln Asp Ser Pro Leu Lys  
                                6675                      6680                      6685  
Leu Glu Asp Phe Ile Pro Met Asp Ser Thr Val Lys Asn Tyr Phe Ile  
6690                      6695                      6700  
Thr Asp Ala Gln Thr Gly Ser Ser Lys Cys Val Cys Ser Val Ile Asp  
6705                      6710                      6715                      6720  
Leu Leu Leu Asp Asp Phe Val Glu Ile Ile Lys Ser Gln Asp Leu Ser  
                                6725                      6730                      6735  
Val Ile Ser Lys Val Val Lys Val Thr Ile Asp Tyr Ala Glu Ile Ser  
                                6740                      6745                      6750  
Phe Met Leu Trp Cys Lys Asp Gly His Val Glu Thr Phe Tyr Pro Lys  
                                6755                      6760                      6765  
Leu Gln Ala Ser Arg Ala Trp Gln Pro Gly Val Ala Met Pro Asn Leu  
6770                      6775                      6780  
Tyr Lys Met Gln Arg Met Leu Leu Glu Lys Cys Asp Leu Gln Asn Tyr  
6785                      6790                      6795                      6800  
Gly Glu Asn Ala Val Ile Pro Lys Gly Ile Met Met Asn Val Ala Lys  
                                6805                      6810                      6815  
Tyr Thr Gln Leu Cys Gln Tyr Leu Asn Thr Leu Thr Leu Ala Val Pro  
                                6820                      6825                      6830  
Tyr Asn Met Arg Val Ile His Phe Gly Ala Gly Ser Asp Lys Gly Val  
                                6835                      6840                      6845  
Ala Pro Gly Thr Ala Val Leu Arg Gln Trp Leu Pro Thr Gly Thr Leu  
6850                      6855                      6860  
Leu Val Asp Ser Asp Leu Asn Asp Phe Val Ser Asp Ala Tyr Ser Thr  
6865                      6870                      6875                      6880  
Leu Ile Gly Asp Cys Ala Thr Val His Thr Ala Asn Lys Trp Asp Leu

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6885

6890

6895

Ile Ile Ser Asp Met Tyr Asp Pro Arg Thr Lys His Val Thr Lys Glu  
6900 6905 6910  
Asn Asp Ser Lys Glu Gly Phe Phe Thr Tyr Leu Cys Gly Phe Ile Lys  
6915 6920 6925  
Gln Lys Leu Ala Leu Gly Gly Ser Ile Ala Val Lys Ile Thr Glu His  
6930 6935 6940  
Ser Trp Asn Ala Asp Leu Tyr Lys Leu Met Gly His Phe Ser Trp Trp  
6945 6950 6955 6960  
Thr Ala Phe Val Thr Asn Val Asn Ala Ser Ser Ser Glu Ala Phe Leu  
6965 6970 6975  
Ile Gly Ala Asn Tyr Leu Gly Lys Pro Lys Glu Gln Ile Asp Gly Tyr  
6980 6985 6990  
Thr Met His Ala Asn Tyr Ile Phe Trp Arg Asn Thr Asn Pro Ile Gln  
6995 7000 7005  
Leu Ser Tyr Ser Leu Phe Asp Met Ser Lys Phe Pro Leu Lys Leu  
7010 7015 7020  
Arg Gly Thr Ala Val Met Ser Leu Lys Glu Asn Gln Ile Asn Asp Met  
7025 7030 7035 7040  
Ile Tyr Ser Leu Leu Glu Lys Gly Arg Leu Ile Ile Arg Glu Asn Asn  
7045 7050 7055  
Arg Val Val Val Ser Ser Asp Ile Leu Val Asn Asn  
7060 7065

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<212> PRT  
<213> SARS coronavirus  
<220>  
<221> misc\_feature  
<222> 4376...4377  
<223> Xaa is any amino acid

<400> 7236  
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1 5 10 15  
Ser Leu Pro Val Leu Gln Val Arg Asp Val Leu Val Arg Gly Phe Gly  
20 25 30  
Asp Ser Val Glu Glu Ala Leu Ser Glu Ala Arg Glu His Leu Lys Asn  
35 40 45  
Gly Thr Cys Gly Leu Val Glu Leu Glu Lys Gly Val Leu Pro Gln Leu  
50 55 60  
Glu Gln Pro Tyr Val Phe Ile Lys Arg Ser Asp Ala Leu Ser Thr Asn  
65 70 75 80  
His Gly His Lys Val Val Glu Leu Val Ala Glu Met Asp Gly Ile Gln  
85 90 95

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Tyr Gly Arg Ser Gly Ile Thr Leu Gly Val Leu Val Pro His Val Gly  
 100 105 110  
 Glu Thr Pro Ile Ala Tyr Arg Asn Val Leu Leu Arg Lys Asn Gly Asn  
 115 125  
 Lys Gly Ala Gly Gly His Ser Tyr Gly Ile Asp Leu Lys Ser Tyr Asp  
 130 135 140  
 Leu Gly Asp Glu Leu Gly Thr Asp Pro Ile Glu Asp Tyr Glu Gln Asn  
 145 150 155 160  
 Trp Asn Thr Lys His Gly Ser Gly Ala Leu Arg Glu Leu Thr Arg Glu  
 165 170 175  
 Leu Asn Gly Gly Ala Val Thr Arg Tyr Val Asp Asn Asn Phe Cys Gly  
 180 185 190  
 Pro Asp Gly Tyr Pro Leu Asp Cys Ile Lys Asp Phe Leu Ala Arg Ala  
 195 200 205  
 Gly Lys Ser Met Cys Thr Leu Ser Glu Gln Leu Asp Tyr Ile Glu Ser  
 210 215 220  
 Lys Arg Gly Val Tyr Cys Cys Arg Asp His Glu His Glu Ile Ala Trp  
 225 230 235 240  
 Phe Thr Glu Arg Ser Asp Lys Ser Tyr Glu His Gln Thr Pro Phe Glu  
 245 250 255  
 Ile Lys Ser Ala Lys Lys Phe Asp Thr Phe Lys Gly Glu Cys Pro Lys  
 260 265 270  
 Phe Val Phe Pro Leu Asn Ser Lys Val Lys Val Ile Gln Pro Arg Val  
 275 280 285  
 Glu Lys Lys Lys Thr Glu Gly Phe Met Gly Arg Ile Arg Ser Val Tyr  
 290 295 300  
 Pro Val Ala Ser Pro Gln Glu Cys Asn Asn Met His Leu Ser Thr Leu  
 305 310 315 320  
 Met Lys Cys Asn His Cys Asp Glu Val Ser Trp Gln Thr Cys Asp Phe  
 325 330 335  
 Leu Lys Ala Thr Cys Glu His Cys Gly Thr Glu Asn Leu Val Ile Glu  
 340 345 350  
 Gly Pro Thr Thr Cys Gly Tyr Leu Pro Thr Asn Ala Val Val Lys Met  
 355 360 365  
 Pro Cys Pro Ala Cys Gln Asp Pro Glu Ile Gly Pro Glu His Ser Val  
 370 375 380  
 Ala Asp Tyr His Asn His Ser Asn Ile Glu Thr Arg Leu Arg Lys Gly  
 385 390 395 400  
 Gly Arg Thr Arg Cys Phe Gly Gly Cys Val Phe Ala Tyr Val Gly Cys  
 405 410 415  
 Tyr Asn Lys Arg Ala Tyr Trp Val Pro Arg Ala Ser Ala Asp Ile Gly  
 420 425 430

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Ser Gly His Thr Gly Ile Thr Gly Asp Asn Val Glu Thr Leu Asn Glu  
435 440 445  
Asp Leu Leu Glu Ile Leu Ser Arg Glu Arg Val Asn Ile Asn Ile Val  
450 455 460  
Gly Asp Phe His Leu Asn Glu Glu Val Ala Ile Ile Leu Ala Ser Phe  
465 470 475 480  
Ser Ala Ser Thr Ser Ala Phe Ile Asp Thr Ile Lys Ser Leu Asp Tyr  
485 490 495  
Lys Ser Phe Lys Thr Ile Val Glu Ser ys Gly Asn Tyr Lys val Thr  
500 505  
Lys Gly Lys Pr Val Lys Gly Ala Trp Asn Ile Gly Gln Gln Arg Ser  
510 515 520  
val Leu Thr Pr Leu ys Gly Phe Pr Ser Gln Ala Ala Gly val Ile  
525 530 535 540  
Arg Ser Ile Phe Ala Arg Thr Leu Asp Ala Ala Asn His Ser Ile Pr  
545 550 555 560  
Asp Leu Gln Arg Ala Ala Val Thr Ile Leu Asp Gly Ile Ser Glu Gln  
565 570 575  
Ser Leu Arg Leu Val Asp Ala e Val Tyr Thr Ser Asp Leu Leu Thr  
580 585 590  
Asn Ser val Ile Ile e Ala Tyr Val Thr Gly Gly Leu val Gln Gln  
595 600 605  
Thr Ser Gln Trp Leu Ser Asn Leu Leu Gly Thr Thr val Glu Lys Leu  
610 615 620  
Arg Pr Ile Phe Glu Trp Ile Glu Ala Lys Leu Ser Ala Gly val Glu  
625 630 635 640  
Phe Leu Lys Asp Ala Trp Glu Ile Leu Lys Phe Leu Ile Thr Gly val  
645 650 655  
Phe Asp Ile val Lys Gly Gln Ile Gln val Ala Ser Asp Asn Ile Lys  
660 665 670  
Asp ys val Lys ys Phe Ile Asp val val Asn Lys Ala Leu Glu e  
675 680 685  
ys Ile Asp Gln val Thr Ile Ala Gly Ala Lys Leu Arg Ser Leu Asn  
690 695 700  
Leu Gly Glu val Phe Ile Ala Gln Ser Lys Gly Leu Tyr Arg Gln ys  
705 710 715 720  
Ile Arg Gly Lys Glu Gln Leu Gln Leu Leu e Pr Leu Lys Ala Pr  
725 730 735  
Lys Glu val Thr Phe Leu Glu Gly Asp Ser His Asp Thr val Leu Thr  
740 745 750  
Ser Glu Glu val val Leu Lys Asn Gly Glu Leu Glu Ala Leu Glu Thr  
755 760 765

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Pro Val Asp Ser Phe Thr Asn Gly Ala Ile Val Gly Thr Pro Val Cys  
 770 775 780  
 Val Asn Gly Leu Met Leu Leu Glu Ile Lys Asp Lys Glu Gln Tyr Cys  
 785 790 795  
 Ala Leu Ser Pro Gly Leu Leu Ala Thr Asn Asn Val Phe Arg Leu Lys  
 805 810 815  
 Gly Gly Ala Pro Ile Lys Gly Val Thr Phe Gly Glu Asp Thr Val Trp  
 820 825 830  
 Glu Val Gln Gly Tyr Lys Asn Val Arg Ile Thr Phe Glu Leu Asp Glu  
 835 840 845  
 Arg Val Asp Lys Val Leu Asn Glu Lys Cys Ser Val Tyr Thr Val Glu  
 850 855 860  
 Ser Gly Thr Glu Val Thr Glu Phe Ala Cys Val Val Ala Glu Ala Val  
 865 870 875 880  
 Val Lys Thr Leu Gln Pro Val Ser Asp Leu Leu Thr Asn Met Gly Ile  
 885 890 895  
 Asp Leu Asp Glu Trp Ser Val Ala Thr Phe Tyr Leu Phe Asp Asp Ala  
 900 905 910  
 Gly Glu Glu Asn Phe Ser Ser Arg Met Tyr Cys Ser Phe Tyr Pro Pro  
 915 920 925  
 Asp Glu Glu Glu Asp Asp Ala Glu Cys Glu Glu Glu Glu Ile Asp  
 930 935 940  
 Glu Thr Cys Glu His Glu Tyr Gly Thr Glu Asp Asp Tyr Gln Gly Leu  
 945 950 955 960  
 Pro Leu Glu Phe Gly Ala Ser Ala Glu Thr Val Arg Val Glu Glu Glu  
 965 970 975  
 Glu Glu Glu Asp Trp Leu Asp Asp Thr Thr Glu Gln Ser Glu Ile Glu  
 980 985 990  
 Pro Glu Pro Glu Pro Thr Pro Glu Glu Pro Val Asn Gln Phe Thr Gly  
 995 1000 1005  
 Tyr Leu Lys Leu Thr Asp Asn Val Ala Ile Lys Cys Val Asp Ile Val  
 1010 1015 1020  
 Lys Glu Ala Gln Ser Ala Asn Pro Met Val Ile Val Asn Ala Ala Asn  
 1025 1030 1035 1040  
 Ile His Leu Lys His Gly Gly Gly Val Ala Gly Ala Leu Asn Lys Ala  
 1045 1050 1055  
 Thr Asn Gly Ala Met Gln Lys Glu Ser Asp Asp Tyr Ile Lys Leu Asn  
 1060 1065 1070  
 Gly Pro Leu Thr Val Gly Gly Ser Cys Leu Leu Ser Gly His Asn Leu  
 1075 1080 1085  
 Ala Lys Lys Cys Leu His Val Val Gly Pro Asn Leu Asn Ala Gly Glu  
 1090 1095 1100

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Asp Ile Gln Leu Leu Lys Ala Ala Tyr Glu Asn Phe Asn Ser Gln Asp  
 1105 1110 1115 1120  
 Ile Leu Leu Ala Pro Leu Leu Ser Ala Gly Ile Phe Gly Ala Lys Pro  
 1125 1130 1135  
 Leu Gln Ser Leu Gln Val Cys Val Gln Thr Val Arg Thr Gln Val Tyr  
 1140 1145 1150  
 Ile Ala Val Asn Asp Lys Ala Leu Tyr Glu Gln Val Val Met Asp Tyr  
 1155 1160 1165  
 Leu Asp Asn Leu Lys Pro Arg Val Glu Ala Pro Lys Gln Glu Glu Pro  
 1170 1175 1180  
 Pro Asn Thr Glu Asp Ser Lys Thr Glu Glu Lys Ser Val Val Gln Lys  
 1185 1190 1195 1200  
 Pro Val Asp Val Lys Pro Lys Ile Lys Ala Cys Ile Asp Glu Val Thr  
 1205 1210 1215  
 Thr Thr Leu Glu Glu Thr Lys Phe Leu Thr Asn Lys Leu Leu Leu Phe  
 1220 1225 1230  
 Ala Asp Ile Asn Gly Lys Leu Tyr His Asp Ser Gln Asn Met Leu Arg  
 1235 1240 1245  
 Gly Glu Asp Met Ser Phe Leu Glu Lys Asp Ala Pro Tyr Met Val Gly  
 1250 1255 1260  
 Asp Val Ile Thr Ser Gly Asp Ile Thr Cys Val Val Ile Pro Ser Lys  
 1265 1270 1275 1280  
 Lys Ala Gly Gly Thr Thr Glu Met Leu Ser Arg Ala Leu Lys Lys Val  
 1285 1290 1295  
 Pro Val Asp Glu Tyr Ile Thr Thr Tyr Pro Gly Gln Gly Cys Ala Gly  
 1300 1305 1310  
 Tyr Thr Leu Glu Glu Ala Lys Thr Ala Leu Lys Lys Cys Lys Ser Ala  
 1315 1320 1325  
 Phe Tyr Val Leu Pro Ser Glu Ala Pro Asn Ala Lys Glu Glu Ile Leu  
 1330 1335 1340  
 Gly Thr Val Ser Trp Asn Leu Arg Glu Met Leu Ala His Ala Glu Glu  
 1345 1350 1355 1360  
 Thr Arg Lys Leu Met Pro Ile Cys Met Asp Val Arg Ala Ile Met Ala  
 1365 1370 1375  
 Thr Ile Gln Arg Lys Tyr Lys Gly Ile Lys Ile Gln Glu Gly Ile Val  
 1380 1385 1390  
 Asp Tyr Gly Val Arg Phe Phe Phe Tyr Thr Ser Lys Glu Pro Val Ala  
 1395 1400 1405  
 Ser Ile Ile Thr Lys Leu Asn Ser Leu Asn Glu Pro Leu Val Thr Met  
 1410 1415 1420  
 Pro Ile Gly Tyr Val Thr His Gly Phe Asn Leu Glu Glu Ala Ala Arg  
 1425 1430 1435 1440

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Cys Met Arg Ser Leu Lys Ala Pro Ala Val Val Ser Val Ser Ser Pro  
 1445 1450 1455  
 Asp Ala Val Thr Thr Tyr Asn Gly Tyr Leu Thr Ser Ser Ser Lys Thr  
 1460 1465 1470  
 Ser Glu Glu His Phe Val Glu Thr Val Ser Leu Ala Gly Ser Tyr Arg  
 1475 1480 1485  
 Asp Trp Ser Tyr Ser Gly Gln Arg Thr Glu Leu Gly Val Glu Phe Leu  
 1490 1495 1500  
 Lys Arg Gly Asp Lys Ile Val Tyr His Thr Leu Glu Ser Pro Val Glu  
 1505 1510 1515 1520  
 Phe His Leu Asp Gly Glu Val Leu Ser Leu Asp Lys Leu Lys Ser Leu  
 1525 1530 1535  
 Leu Ser Leu Arg Glu Val Lys Thr Ile Lys Val Phe Thr Thr Val Asp  
 1540 1545 1550  
 Asn Thr Asn Leu His Thr Gln Leu Val Asp Met Ser Met Thr Tyr Gly  
 1555 1560 1565  
 Gln Gln Phe Gly Pro Thr Tyr Leu Asp Gly Ala Asp Val Thr Lys Ile  
 1570 1575 1580  
 Lys Pro His Val Asn His Glu Gly Lys Thr Phe Phe Val Leu Pro Ser  
 1585 1590 1595 1600  
 Asp Asp Thr Leu Arg Ser Glu Ala Phe Glu Tyr Tyr His Thr Leu Asp  
 1605 1610 1615  
 Glu Ser Phe Leu Gly Arg Tyr Met Ser Ala Leu Asn His Thr Lys Lys  
 1620 1625 1630  
 Trp Lys Phe Pro Gln Val Gly Gly Leu Thr Ser Ile Lys Trp Ala Asp  
 1635 1640 1645  
 Asn Asn Cys Tyr Leu Ser Ser Val Leu Leu Ala Leu Gln Gln Leu Glu  
 1650 1655 1660  
 Val Lys Phe Asn Ala Pro Ala Leu Gln Glu Ala Tyr Tyr Arg Ala Arg  
 1665 1670 1675 1680  
 Ala Gly Asp Ala Ala Asn Phe Cys Ala Leu Ile Leu Ala Tyr Ser Asn  
 1685 1690 1695  
 Lys Thr Val Gly Glu Leu Gly Asp Val Arg Glu Thr Met Thr His Leu  
 1700 1705 1710  
 Leu Gln His Ala Asn Leu Glu Ser Ala Lys Arg Val Leu Asn Val Val  
 1715 1720 1725  
 Cys Lys His Cys Gly Gln Lys Thr Thr Thr Leu Thr Gly Val Glu Ala  
 1730 1735 1740  
 Val Met Tyr Met Gly Thr Leu Ser Tyr Asp Asn Leu Lys Thr Gly Val  
 1745 1750 1755 1760  
 Ser Ile Pro Cys Val Cys Gly Arg Asp Ala Thr Gln Tyr Leu Val Gln  
 1765 1770 1775



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Gln Glu Ser Ser Phe Val Met Met Ser Ala Pro Pro Ala Glu Tyr Lys  
1780 1785 1790

Leu Gln Gln Gly Thr Phe Leu Cys Ala Asn Glu Tyr Thr Gly Asn Tyr  
1795 1800 1805

Gln Cys Gly His Tyr Thr His Ile Thr Ala Lys Glu Thr Leu Tyr Arg  
1810 1815 1820

Ile Asp Gly Ala His Leu Thr Lys Met Ser Glu Tyr Lys Gly Pro Val  
1825 1830 1835 1840

Thr Asp Val Phe Tyr Lys Glu Thr Ser Tyr Thr Thr Thr Ile Lys Pro  
1845 1850 1855

Val Ser Tyr Lys Leu Asp Gly Val Thr Tyr Thr Glu Ile Glu Pro Lys  
1860 1865 1870

Leu Asp Gly Tyr Tyr Lys Lys Asp Asn Ala Tyr Tyr Thr Glu Gln Pro  
1875 1880 1885

Ile Asp Leu Val Pro Thr Gln Pro Leu Pro Asn Ala Ser Phe Asp Asn  
1890 1895 1900

Phe Lys Leu Thr Cys Ser Asn Thr Lys Phe Ala Asp Asp Leu Asn Gln  
1905 1910 1915 1920

Met Thr Gly Phe Thr Lys Pro Ala Ser Arg Glu Leu Ser Val Thr Phe  
1925 1930 1935

Phe Pro Asp Leu Asn Gly Asp Val Val Ala Ile Asp Tyr Arg His Tyr  
1940 1945 1950

Ser Ala Ser Phe Lys Lys Gly Ala Lys Leu Leu His Lys Pro Ile Val  
1955 1960 1965

Trp His Ile Asn Gln Ala Thr Thr Lys Thr Thr Phe Lys Pro Asn Thr  
1970 1975 1980

Trp Cys Leu Arg Cys Leu Trp Ser Thr Lys Pro Val Asp Thr Ser Asn  
1985 1990 1995 2000

Ser Phe Glu Val Leu Ala Val Glu Asp Thr Gln Gly Met Asp Asn Leu  
2005 2010 2015

Ala Cys Glu Ser Gln Gln Pro Thr Ser Glu Glu Val Val Glu Asn Pro  
2020 2025 2030

Thr Ile Gln Lys Glu Val Ile Glu Cys Asp Val Lys Thr Thr Glu Val  
2035 2040 2045

Val Gly Asn Val Ile Leu Lys Pro Ser Asp Glu Gly Val Lys Val Thr  
2050 2055 2060

Gln Glu Leu Gly His Glu Asp Leu Met Ala Ala Tyr Val Glu Asn Thr  
2065 2070 2075 2080

Ser Ile Thr Ile Lys Lys Pro Asn Glu Leu Ser Leu Ala Leu Gly Leu  
2085 2090 2095

Lys Thr Ile Ala Thr His Gly Ile Ala Ala Ile Asn Ser Val Pro Trp  
2100 2105 2110

SEQLIST-20480.TXT

Ser Lys Ile Leu Ala Tyr Val Lys Pro Phe Leu Gly Gln Ala Ala Ile  
2115 2120 2125

Thr Thr Ser Asn Cys Ala Lys Arg Leu Ala Gln Arg Val Phe Asn Asn  
2130 2135 2140

Tyr Met Pro Tyr Val Phe Thr Leu Leu Phe Gln Leu Cys Thr Phe Thr  
2145 2150 2155 2160

Lys Ser Thr Asn Ser Arg Ile Arg Ala Ser Leu Pro Thr Thr Ile Ala  
2165 2170 2175

Lys Asn Ser Val Lys Ser Val Ala Lys Leu Cys Leu Asp Ala Gly Ile  
2180 2185 2190

Asn Tyr Val Lys Ser Pro Lys Phe Ser Lys Leu Phe Thr Ile Ala Met  
2195 2200 2205

Trp Leu Leu Leu Leu Ser Ile Cys Leu Gly Ser Leu Ile Cys Val Thr  
2210 2215 2220

Ala Ala Phe Gly Val Leu Leu Ser Asn Phe Gly Ala Pro Ser Tyr Cys  
2225 2230 2235 2240

Asn Gly Val Arg Glu Leu Tyr Leu Asn Ser Ser Asn Val Thr Thr Met  
2245 2250 2255

Asp Phe Cys Glu Gly Ser Phe Pro Cys Ser Ile Cys Leu Ser Gly Leu  
2260 2265 2270

Asp Ser Leu Asp Ser Tyr Pro Ala Leu Glu Thr Ile Gln Val Thr Ile  
2275 2280 2285

Ser Ser Tyr Lys Leu Asp Leu Thr Ile Leu Gly Leu Ala Ala Glu Trp  
2290 2295 2300

Val Leu Ala Tyr Met Leu Phe Thr Lys Phe Phe Tyr Leu Leu Gly Leu  
2305 2310 2315 2320

Ser Ala Ile Met Gln Val Phe Phe Gly Tyr Phe Ala Ser His Phe Ile  
2325 2330 2335

Ser Asn Ser Trp Leu Met Trp Phe Ile Ile Ser Ile Val Gln Met Ala  
2340 2345 2350

Pro Val Ser Ala Met Val Arg Met Tyr Ile Phe Phe Ala Ser Phe Tyr  
2355 2360 2365

Tyr Ile Trp Lys Ser Tyr Val His Ile Met Asp Gly Cys Thr Ser Ser  
2370 2375 2380

Thr Cys Met Met Cys Tyr Lys Arg Asn Arg Ala Thr Arg Val Glu Cys  
2385 2390 2395 2400

Thr Thr Ile Val Asn Gly Met Lys Arg Ser Phe Tyr Val Tyr Ala Asn  
2405 2410 2415

Gly Gly Arg Gly Phe Cys Lys Thr His Asn Trp Asn Cys Leu Asn Cys  
2420 2425 2430

Asp Thr Phe Cys Thr Gly Ser Thr Phe Ile Ser Asp Glu Val Ala Arg  
2435 2440 2445

SEQLIST-20480.TXT

Asp Leu Ser Leu Gln Phe Lys Arg Pro Ile Asn Pro Thr Asp Gln Ser  
 2450 2455 2460  
 Ser Tyr Ile Val Asp Ser Val Ala Val Lys Asn Gly Ala Leu His Leu  
 2465 2470 2475 2480  
 Tyr Phe Asp Lys Ala Gly Gln Lys Thr Tyr Glu Arg His Pro Leu Ser  
 2485 2490 2495  
 His Phe Val Asn Leu Asp Asn Leu Arg Ala Asn Asn Thr Lys Gly Ser  
 2500 2505 2510  
 Leu Pro Ile Asn Val Ile Val Phe Asp Gly Lys Ser Lys Cys Asp Glu  
 2515 2520 2525  
 Ser Ala Ser Lys Ser Ala Ser Val Tyr Tyr Ser Gln Leu Met Cys Gln  
 2530 2535 2540  
 Pro Ile Leu Leu Leu Asp Gln Ala Leu Val Ser Asp Val Gly Asp Ser  
 2545 2550 2555 2560  
 Thr Glu Val Ser Val Lys Met Phe Asp Ala Tyr Val Asp Thr Phe Ser  
 2565 2570 2575  
 Ala Thr Phe Ser Val Pro Met Glu Lys Leu Lys Ala Leu Val Ala Thr  
 2580 2585 2590  
 Ala His Ser Glu Leu Ala Lys Gly Val Ala Leu Asp Gly Val Leu Ser  
 2595 2600 2605  
 Thr Phe Val Ser Ala Ala Arg Gln Gly Val Val Asp Thr Asp Val Asp  
 2610 2615 2620  
 Thr Lys Asp Val Ile Glu Cys Leu Lys Leu Ser His His Ser Asp Leu  
 2625 2630 2635 2640  
 Glu Val Thr Gly Asp Ser Cys Asn Asn Phe Met Leu Thr Tyr Asn Lys  
 2645 2650 2655  
 Val Glu Asn Met Thr Pro Arg Asp Leu Gly Ala Cys Ile Asp Cys Asn  
 2660 2665 2670  
 Ala Arg His Ile Asn Ala Gln Val Ala Lys Ser His Asn Val Ser Leu  
 2675 2680 2685  
 Ile Trp Asn Val Lys Asp Tyr Met Ser Leu Ser Glu Gln Leu Arg Lys  
 2690 2695 2700  
 Gln Ile Arg Ser Ala Ala Lys Lys Asn Asn Ile Pro Phe Arg Leu Thr  
 2705 2710 2715 2720  
 Cys Ala Thr Thr Arg Gln Val Val Asn Val Ile Thr Thr Lys Ile Ser  
 2725 2730 2735  
 Leu Lys Gly Gly Lys Ile Val Ser Thr Cys Phe Lys Leu Met Leu Lys  
 2740 2745 2750  
 Ala Thr Leu Leu Cys Val Leu Ala Ala Leu Val Cys Tyr Ile Val Met  
 2755 2760 2765  
 Pro Val His Thr Leu Ser Ile His Asp Gly Tyr Thr Asn Glu Ile Ile  
 2770 2775 2780

SEQLIST-20480.TXT

Gly Tyr Lys Ala Ile Gln Asp Gly Val Thr Arg Asp Ile Ile Ser Thr  
 2785 2790 2795 2800  
 Asp Asp Cys Phe Ala Asn Lys His Ala Gly Phe Asp Ala Trp Phe Ser  
 2805 2810 2815  
 Gln Arg Gly Gly Ser Tyr Lys Asn Asp Lys Ser Cys Pro Val Val Ala  
 2820 2825 2830  
 Ala Ile Ile Thr Arg Glu Ile Gly Phe Ile Val Pro Gly Leu Pro Gly  
 2835 2840 2845  
 Thr Val Leu Arg Ala Ile Asn Gly Asp Phe Leu His Phe Leu Pro Arg  
 2850 2855 2860  
 Val Phe Ser Ala Val Gly Asn Ile Cys Tyr Thr Pro Ser Lys Leu Ile  
 2865 2870 2875 2880  
 Glu Tyr Ser Asp Phe Ala Thr Ser Ala Cys Val Leu Ala Ala Glu Cys  
 2885 2890 2895  
 Thr Ile Phe Lys Asp Ala Met Gly Lys Pro Val Pro Tyr Cys Tyr Asp  
 2900 2905 2910  
 Thr Asn Leu Leu Glu Gly Ser Ile Ser Tyr Ser Glu Leu Arg Pro Asp  
 2915 2920 2925  
 Thr Arg Tyr Val Leu Met Asp Gly Ser Ile Ile Gln Phe Pro Asn Thr  
 2930 2935 2940  
 Tyr Leu Glu Gly Ser Val Arg Val Val Thr Thr Phe Asp Ala Glu Tyr  
 2945 2950 2955 2960  
 Cys Arg His Gly Thr Cys Glu Arg Ser Glu Val Gly Ile Cys Leu Ser  
 2965 2970 2975  
 Thr Ser Gly Arg Trp Val Leu Asn Asn Glu His Tyr Arg Ala Leu Ser  
 2980 2985 2990  
 Gly Val Phe Cys Gly Val Asp Ala Met Asn Leu Ile Ala Asn Ile Phe  
 2995 3000 3005  
 Thr Pro Leu Val Gln Pro Val Gly Ala Leu Asp Val Ser Ala Ser Val  
 3010 3015 3020  
 Val Ala Gly Gly Ile Ile Ala Ile Leu Val Thr Cys Ala Ala Tyr Tyr  
 3025 3030 3035 3040  
 Phe Met Lys Phe Arg Arg Val Phe Gly Glu Tyr Asn His Val Val Ala  
 3045 3050 3055  
 Ala Asn Ala Leu Leu Phe Leu Met Ser Phe Thr Ile Leu Cys Leu Val  
 3060 3065 3070  
 Pro Ala Tyr Ser Phe Leu Pro Gly Val Tyr Ser Val Phe Tyr Leu Tyr  
 3075 3080 3085  
 Leu Thr Phe Tyr Phe Thr Asn Asp Val Ser Phe Leu Ala His Leu Gln  
 3090 3095 3100  
 Trp Phe Ala Met Phe Ser Pro Ile Val Pro Phe Trp Ile Thr Ala Ile  
 3105 3110 3115 3120

SEQLIST-20480.TXT

Tyr Val Phe Cys Ile Ser Leu Lys His Cys His Trp Phe Phe Asn Asn  
 3125 3130 3135  
 Tyr Leu Arg Lys Arg Val Met Phe Asn Gly Val Thr Phe Ser Thr Phe  
 3140 3145 3150  
 Glu Glu Ala Ala Leu Cys Thr Phe Leu Leu Asn Lys Glu Met Tyr Leu  
 3155 3160 3165  
 Lys Leu Arg Ser Glu Thr Leu Leu Pro Leu Thr Gln Tyr Asn Arg Tyr  
 3170 3175 3180  
 Leu Ala Leu Tyr Asn Lys Tyr Lys Tyr Phe Ser Gly Ala Leu Asp Thr  
 3185 3190 3200  
 Thr Ser Tyr Arg Glu Ala Ala Cys Cys His Leu Ala Lys Ala Leu Asn  
 3205 3210 3215  
 Asp Phe Ser Asn Ser Gly Ala Asp Val Leu Tyr Gln Pro Pro Gln Thr  
 3220 3225 3230  
 Ser Ile Thr Ser Ala Val Leu Gln Ser Gly Phe Arg Lys Met Ala Phe  
 3235 3240 3245  
 Pro Ser Gly Lys Val Glu Gly Cys Met Val Gln Val Thr Cys Gly Thr  
 3250 3255 3260  
 Thr Thr Leu Asn Gly Leu Trp Leu Asp Asp Thr Val Tyr Cys Pro Arg  
 3265 3270 3275 3280  
 His Val Ile Cys Thr Ala Glu Asp Met Leu Asn Pro Asn Tyr Glu Asp  
 3285 3290 3295  
 Leu Leu Ile Arg Lys Ser Asn His Ser Phe Leu Val Gln Ala Gly Asn  
 3300 3305 3310  
 Val Gln Leu Arg Val Ile Gly His Ser Met Gln Asn Cys Leu Leu Arg  
 3315 3320 3325  
 Leu Lys Val Asp Thr Ser Asn Pro Lys Thr Pro Lys Tyr Lys Phe Val  
 3330 3335 3340  
 Arg Ile Gln Pro Gly Gln Thr Phe Ser Val Leu Ala Cys Tyr Asn Gly  
 3345 3350 3355 3360  
 Ser Pro Ser Gly Val Tyr Gln Cys Ala Met Arg Pro Asn His Thr Ile  
 3365 3370 3375  
 Lys Gly Ser Phe Leu Asn Gly Ser Cys Gly Ser Val Gly Phe Asn Ile  
 3380 3385 3390  
 Asp Tyr Asp Cys Val Ser Phe Cys Tyr Met His His Met Glu Leu Pro  
 3395 3400 3405  
 Thr Gly Val His Ala Gly Thr Asp Leu Glu Gly Lys Phe Tyr Gly Pro  
 3410 3415 3420  
 Phe Val Asp Arg Gln Thr Ala Gln Ala Ala Gly Thr Asp Thr Thr Ile  
 3425 3430 3435 3440  
 Thr Leu Asn Val Leu Ala Trp Leu Tyr Ala Ala Val Ile Asn Gly Asp  
 3445 3450 3455

SEQLIST-20480.TXT

Arg Trp Phe Leu Asn Arg Phe Thr Thr Thr Leu Asn Asp Phe Asn Leu  
3460 3465 3470

Val Ala Met Lys Tyr Asn Tyr Glu Pro Leu Thr Gln Asp His Val Asp  
3475 3480 3485

Ile Leu Gly Pro Leu Ser Ala Gln Thr Gly Ile Ala Val Leu Asp Met  
3490 3495 3500

Cys Ala Ala Leu Lys Glu Leu Leu Gln Asn Gly Met Asn Gly Arg Thr  
3505 3510 3515 3520

Ile Leu Gly Ser Thr Ile Leu Glu Asp Glu Phe Thr Pro Phe Asp Val  
3525 3530 3535

Val Arg Gln Cys Ser Gly Val Thr Phe Gln Gly Lys Phe Lys Lys Ile  
3540 3545 3550

Val Lys Gly Thr His His Trp Met Leu Leu Thr Phe Leu Thr Ser Leu  
3555 3560 3565

Leu Ile Leu Val Gln Ser Thr Gln Trp Ser Leu Phe Phe Phe Val Tyr  
3570 3575 3580

Glu Asn Ala Phe Leu Pro Phe Thr Leu Gly Ile Met Ala Ile Ala Ala  
3585 3590 3595 3600

Cys Ala Met Leu Leu Val Lys His Lys His Ala Phe Leu Cys Leu Phe  
3605 3610 3615

Leu Leu Pro Ser Leu Ala Thr Val Ala Tyr Phe Asn Met Val Tyr Met  
3620 3625 3630

Pro Ala Ser Trp Val Met Arg Ile Met Thr Trp Leu Glu Leu Ala Asp  
3635 3640 3645

Thr Ser Leu Ser Gly Tyr Arg Leu Lys Asp Cys Val Met Tyr Ala Ser  
3650 3655 3660

Ala Leu Val Leu Leu Ile Leu Met Thr Ala Arg Thr Val Tyr Asp Asp  
3665 3670 3675 3680

Ala Ala Arg Arg Val Trp Thr Leu Met Asn Val Ile Thr Leu Val Tyr  
3685 3690 3695

Lys Val Tyr Tyr Gly Asn Ala Leu Asp Gln Ala Ile Ser Met Trp Ala  
3700 3705 3710

Leu Val Ile Ser Val Thr Ser Asn Tyr Ser Gly Val Val Thr Thr Ile  
3715 3720 3725

Met Phe Leu Ala Arg Ala Ile Val Phe Val Cys Val Glu Tyr Tyr Pro  
3730 3735 3740

Leu Leu Phe Ile Thr Gly Asn Thr Leu Gln Cys Ile Met Leu Val Tyr  
3745 3750 3755 3760

Cys Phe Leu Gly Tyr Cys Cys Cys Cys Tyr Phe Gly Leu Phe Cys Leu  
3765 3770 3775

Leu Asn Arg Tyr Phe Arg Leu Thr Leu Gly Val Tyr Asp Tyr Leu Val  
3780 3785 3790

SEQLIST-20480.TXT

Ser Thr Gln Glu Phe Arg Tyr Met Asn Ser Gln Gly Leu Leu Pro Pro  
3795 3800 3805

Lys Ser Ser Ile Asp Ala Phe Lys Leu Asn Ile Lys Leu Leu Gly Ile  
3810 3815 3820

Gly Gly Lys Pro Cys Ile Lys Val Ala Thr Val Gln Ser Lys Met Ser  
3825 3830 3835 3840

Asp Val Lys Cys Thr Ser Val Val Leu Leu Ser Val Leu Gln Gln Leu  
3845 3850 3855

Arg Val Glu Ser Ser Ser Lys Leu Trp Ala Gln Cys Val Gln Leu His  
3860 3865 3870

Asn Asp Ile Leu Leu Ala Lys Asp Thr Thr Glu Ala Phe Glu Lys Met  
3875 3880 3885

Val Ser Leu Leu Ser Val Leu Leu Ser Met Gln Gly Ala Val Asp Ile  
3890 3895 3900

Asn Arg Leu Cys Glu Glu Met Leu Asp Asn Arg Ala Thr Leu Gln Ala  
3905 3910 3915 3920

Ile Ala Ser Glu Phe Ser Ser Leu Pro Ser Tyr Ala Ala Tyr Ala Thr  
3925 3930 3935

Ala Gln Glu Ala Tyr Glu Gln Ala Val Ala Asn Gly Asp Ser Glu Val  
3940 3945 3950

Val Leu Lys Lys Leu Lys Lys Ser Leu Asn Val Ala Lys Ser Glu Phe  
3955 3960 3965

Asp Arg Asp Ala Ala Met Gln Arg Lys Leu Glu Lys Met Ala Asp Gln  
3970 3975 3980

Ala Met Thr Gln Met Tyr Lys Gln Ala Arg Ser Glu Asp Lys Arg Ala  
3985 3990 3995 4000

Lys Val Thr Ser Ala Met Gln Thr Met Leu Phe Thr Met Leu Arg Lys  
4005 4010 4015

Leu Asp Asn Asp Ala Leu Asn Asn Ile Ile Asn Asn Ala Arg Asp Gly  
4020 4025 4030

Cys Val Pro Leu Asn Ile Ile Pro Leu Thr Thr Ala Ala Lys Leu Met  
4035 4040 4045

Val Val Val Pro Asp Tyr Gly Thr Tyr Lys Asn Thr Cys Asp Gly Asn  
4050 4055 4060

Thr Phe Thr Tyr Ala Ser Ala Leu Trp Glu Ile Gln Gln Val Val Asp  
4065 4070 4075 4080

Ala Asp Ser Lys Ile Val Gln Leu Ser Glu Ile Asn Met Asp Asn Ser  
4085 4090 4095

Pro Asn Leu Ala Trp Pro Leu Ile Val Thr Ala Leu Arg Ala Asn Ser  
4100 4105 4110

Ala Val Lys Leu Gln Asn Asn Glu Leu Ser Pro Val Ala Leu Arg Gln  
4115 4120 4125

SEQLIST-20480.TXT

Met Ser Cys Ala Ala Gly Thr Thr Gln Thr Ala Cys Thr Asp Asp Asn  
4130 4135 4140

Ala Leu Ala Tyr Tyr Asn Asn Ser Lys Gly Gly Arg Phe Val Leu Ala  
4145 4150 4155 4160

Leu Leu Ser Asp His Gln Asp Leu Lys Trp Ala Arg Phe Pro Lys Ser  
4165 4170 4175

Asp Gly Thr Gly Thr Ile Tyr Thr Glu Leu Glu Pro Pro Cys Arg Phe  
4180 4185 4190

Val Thr Asp Thr Pro Lys Gly Pro Lys Val Lys Tyr Leu Tyr Phe Ile  
4195 4200 4205

Lys Gly Leu Asn Asn Leu Asn Arg Gly Met Val Leu Gly Ser Leu Ala  
4210 4215 4220

Ala Thr Val Arg Leu Gln Ala Gly Asn Ala Thr Glu Val Pro Ala Asn  
4225 4230 4235 4240

Ser Thr Val Leu Ser Phe Cys Ala Phe Ala Val Asp Pro Ala Lys Ala  
4245 4250 4255

Tyr Lys Asp Tyr Leu Ala Ser Gly Gly Gln Pro Ile Thr Asn Cys Val  
4260 4265 4270

Lys Met Leu Cys Thr His Thr Gly Thr Gly Gln Ala Ile Thr Val Thr  
4275 4280 4285

Pro Glu Ala Asn Met Asp Gln Glu Ser Phe Gly Gly Ala Ser Cys Cys  
4290 4295 4300

Leu Tyr Cys Arg Cys His Ile Asp His Pro Asn Pro Lys Gly Phe Cys  
4305 4310 4315 4320

Asp Leu Lys Gly Lys Tyr Val Gln Ile Pro Thr Thr Cys Ala Asn Asp  
4325 4330 4335

Pro Val Gly Phe Thr Leu Arg Asn Thr Val Cys Thr Val Cys Gly Met  
4340 4345 4350

Trp Lys Gly Tyr Gly Cys Ser Cys Asp Gln Leu Arg Glu Pro Leu Met  
4355 4360 4365

Gln Ser Ala Asp Ala Ser Thr Xaa Xaa Gly Val Ser Ala Ala Arg Leu  
4370 4375 4380

Thr Pro Cys Gly Thr Gly Thr Ser Thr Asp Val Val Tyr Arg Ala Phe  
4385 4390 4395 4400

Asp Ile Tyr Asn Glu Lys Val Ala Gly Phe Ala Lys Phe Leu Lys Thr  
4405 4410 4415

Asn Cys Cys Arg Phe Gln Glu Lys Asp Glu Glu Gly Asn Leu Leu Asp  
4420 4425 4430

Ser Tyr Phe Val Val Lys Arg His Thr Met Ser Asn Tyr Gln His Glu  
4435 4440 4445

Glu Thr Ile Tyr Asn Leu Val Lys Asp Cys Pro Ala Val Ala Val His  
4450 4455 4460



SEQLIST-20480.TXT

Asp Phe Phe Lys Phe Arg Val Asp Gly Asp Met Val Pro His Ile Ser  
 4465 4470 4475 4480  
 Arg Gln Arg Leu Thr Lys Tyr Thr Met Ala Asp Leu Val Tyr Ala Leu  
 4485 4490 4495  
 Arg His Phe Asp Glu Gly Asn Cys Asp Thr Leu Lys Glu Ile Leu Val  
 4500 4505 4510  
 Thr Tyr Asn Cys Cys Asp Asp Asp Tyr Phe Asn Lys Lys Asp Trp Tyr  
 4515 4520 4525  
 Asp Phe Val Glu Asn Pro Asp Ile Leu Arg Val Tyr Ala Asn Leu Gly  
 4530 4535 4540  
 Glu Arg Val Arg Gln Ser Leu Leu Lys Thr Val Gln Phe Cys Asp Ala  
 4545 4550 4555 4560  
 Met Arg Asp Ala Gly Ile Val Gly Val Leu Thr Leu Asp Asn Gln Asp  
 4565 4570 4575  
 Leu Asn Gly Asn Trp Tyr Asp Phe Gly Asp Phe Val Gln Val Ala Pro  
 4580 4585 4590  
 Gly Cys Gly Val Pro Ile Val Asp Ser Tyr Tyr Ser Leu Leu Met Pro  
 4595 4600 4605  
 Ile Leu Thr Leu Thr Arg Ala Leu Ala Ala Glu Ser His Met Asp Ala  
 4610 4615 4620  
 Asp Leu Ala Lys Pro Leu Ile Lys Trp Asp Leu Leu Lys Tyr Asp Phe  
 4625 4630 4635 4640  
 Thr Glu Glu Arg Leu Cys Leu Phe Asp Arg Tyr Phe Lys Tyr Trp Asp  
 4645 4650 4655  
 Gln Thr Tyr His Pro Asn Cys Ile Asn Cys Leu Asp Asp Arg Cys Ile  
 4660 4665 4670  
 Leu His Cys Ala Asn Phe Asn Val Leu Phe Ser Thr Val Phe Pro Pro  
 4675 4680 4685  
 Thr Ser Phe Gly Pro Leu Val Arg Lys Ile Phe Val Asp Gly Val Pro  
 4690 4695 4700  
 Phe Val Val Ser Thr Gly Tyr His Phe Arg Glu Leu Gly Val Val His  
 4705 4710 4715 4720  
 Asn Gln Asp Val Asn Leu His Ser Ser Arg Leu Ser Phe Lys Glu Leu  
 4725 4730 4735  
 Leu Val Tyr Ala Ala Asp Pro Ala Met His Ala Ala Ser Gly Asn Leu  
 4740 4745 4750  
 Leu Leu Asp Lys Arg Thr Thr Cys Phe Ser Val Ala Ala Leu Thr Asn  
 4755 4760 4765  
 Asn Val Ala Phe Gln Thr Val Lys Pro Gly Asn Phe Asn Lys Asp Phe  
 4770 4775 4780  
 Tyr Asp Phe Ala Val Ser Lys Gly Phe Phe Lys Glu Gly Ser Ser Val  
 4785 4790 4795 4800

SEQLIST-20480.TXT

Glu Leu Lys His Phe Phe Phe Ala Gln Asp Gly Asn Ala Ala Ile Ser  
 4805 4810 4815  
 Asp Tyr Asp Tyr Tyr Arg Tyr Asn Leu Pro Thr Met Cys Asp Ile Arg  
 4820 4825 4830  
 Gln Leu Leu Phe Val Val Glu Val Val Asp Lys Tyr Phe Asp Cys Tyr  
 4835 4840 4845  
 Asp Gly Gly Cys Ile Asn Ala Asn Gln Val Ile Val Asn Asn Leu Asp  
 4850 4855 4860  
 Lys Ser Ala Gly Phe Pro Phe Asn Lys Trp Gly Lys Ala Arg Leu Tyr  
 4865 4870 4875 4880  
 Tyr Asp Ser Met Ser Tyr Glu Asp Gln Asp Ala Leu Phe Ala Tyr Thr  
 4885 4890 4895  
 Lys Arg Asn Val Ile Pro Thr Ile Thr Gln Met Asn Leu Lys Tyr Ala  
 4900 4905 4910  
 Ile Ser Ala Lys Asn Arg Ala Arg Thr Val Ala Gly Val Ser Ile Cys  
 4915 4920 4925  
 Ser Thr Met Thr Asn Arg Gln Phe His Gln Lys Leu Leu Lys Ser Ile  
 4930 4935 4940  
 Ala Ala Thr Arg Gly Ala Thr Val Val Ile Gly Thr Ser Lys Phe Tyr  
 4945 4950 4955 4960  
 Gly Gly Trp His Asn Met Leu Lys Thr Val Tyr Ser Asp Val Glu Thr  
 4965 4970 4975  
 Pro His Leu Met Gly Trp Asp Tyr Pro Lys Cys Asp Arg Ala Met Pro  
 4980 4985 4990  
 Asn Met Leu Arg Ile Met Ala Ser Leu Val Leu Ala Arg Lys His Asn  
 4995 5000 5005  
 Thr Cys Cys Asn Leu Ser His Arg Phe Tyr Arg Leu Ala Asn Glu Cys  
 5010 5015 5020  
 Ala Gln Val Leu Ser Glu Met Val Met Cys Gly Gly Ser Leu Tyr Val  
 5025 5030 5035 5040  
 Lys Pro Gly Gly Thr Ser Ser Gly Asp Ala Thr Thr Ala Tyr Ala Asn  
 5045 5050 5055  
 Ser Val Phe Asn Ile Cys Gln Ala Val Thr Ala Asn Val Asn Ala Leu  
 5060 5065 5070  
 Leu Ser Thr Asp Gly Asn Lys Ile Ala Asp Lys Tyr Val Arg Asn Leu  
 5075 5080 5085  
 Gln His Arg Leu Tyr Glu Cys Leu Tyr Arg Asn Arg Asp Val Asp His  
 5090 5095 5100  
 Glu Phe Val Asp Glu Phe Tyr Ala Tyr Leu Arg Lys His Phe Ser Met  
 5105 5110 5115 5120  
 Met Ile Leu Ser Asp Asp Ala Val Val Cys Tyr Asn Ser Asn Tyr Ala  
 5125 5130 5135

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Ala Gln Gly Leu Val Ala Ser Ile Lys Asn Phe Lys Ala Val Leu Tyr  
5140 5145 5150

Tyr Gln Asn Asn Val Phe Met Ser Glu Ala Lys Cys Trp Thr Glu Thr  
5155 5160 5165

Asp Leu Thr Lys Gly Pro His Glu Phe Cys Ser Gln His Thr Met Leu  
5170 5175 5180

Val Lys Gln Gly Asp Asp Tyr Val Tyr Leu Pro Tyr Pro Asp Pro Ser  
5185 5190 5195 5200

Arg Ile Leu Gly Ala Gly Cys Phe Val Asp Asp Ile Val Lys Thr Asp  
5205 5210 5215

Gly Thr Leu Met Ile Glu Arg Phe Val Ser Leu Ala Ile Asp Ala Tyr  
5220 5225 5230

Pro Leu Thr Lys His Pro Asn Gln Glu Tyr Ala Asp Val Phe His Leu  
5235 5240 5245

Tyr Leu Gln Tyr Ile Arg Lys Leu His Asp Glu Leu Thr Gly His Met  
5250 5255 5260

Leu Asp Met Tyr Ser Val Met Leu Thr Asn Asp Asn Thr Ser Arg Tyr  
5265 5270 5275 5280

Trp Glu Pro Glu Phe Tyr Glu Ala Met Tyr Thr Pro His Thr Val Leu  
5285 5290 5295

Gln Ala Val Gly Ala Cys Val Leu Cys Asn Ser Gln Thr Ser Leu Arg  
5300 5305 5310

Cys Gly Ala Cys Ile Arg Arg Pro Phe Leu Cys Cys Lys Cys Cys Tyr  
5315 5320 5325

Asp His Val Ile Ser Thr Ser His Lys Leu Val Leu Ser Val Asn Pro  
5330 5335 5340

Tyr Val Cys Asn Ala Pro Gly Cys Asp Val Thr Asp Val Thr Gln Leu  
5345 5350 5355 5360

Tyr Leu Gly Gly Met Ser Tyr Tyr Cys Lys Ser His Lys Pro Pro Ile  
5365 5370 5375

Ser Phe Pro Leu Cys Ala Asn Gly Gln Val Phe Gly Leu Tyr Lys Asn  
5380 5385 5390

Thr Cys Val Gly Ser Asp Asn Val Thr Asp Phe Asn Ala Ile Ala Thr  
5395 5400 5405

Cys Asp Trp Thr Asn Ala Gly Asp Tyr Ile Leu Ala Asn Thr Cys Thr  
5410 5415 5420

Glu Arg Leu Lys Leu Phe Ala Ala Glu Thr Leu Lys Ala Thr Glu Glu  
5425 5430 5435 5440

Thr Phe Lys Leu Ser Tyr Gly Ile Ala Thr Val Arg Glu Val Leu Ser  
5445 5450 5455

Asp Arg Glu Leu His Leu Ser Trp Glu Val Gly Lys Pro Arg Pro Pro  
5460 5465 5470

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Leu Asn Arg Asn Tyr Val Phe Thr Gly Tyr Arg Val Thr Lys Asn Ser  
 5475 5480 5485  
 Lys Val Gln Ile Gly Glu Tyr Thr Phe Glu Lys Gly Asp Tyr Gly Asp  
 5490 5495 5500  
 Ala Val Val Tyr Arg Gly Thr Thr Thr Tyr Lys Leu Asn Val Gly Asp  
 5505 5510 5515 5520  
 Tyr Phe Val Leu Thr Ser His Thr Val Met Pro Leu Ser Ala Pro Thr  
 5525 5530 5535  
 Leu Val Pro Gln Glu His Tyr Val Arg Ile Thr Gly Leu Tyr Pro Thr  
 5540 5545 5550  
 Leu Asn Ile Ser Asp Glu Phe Ser Ser Asn Val Ala Asn Tyr Gln Lys  
 5555 5560 5565  
 Val Gly Met Gln Lys Tyr Ser Thr Leu Gln Gly Pro Pro Gly Thr Gly  
 5570 5575 5580  
 Lys Ser His Phe Ala Ile Gly Leu Ala Leu Tyr Tyr Pro Ser Ala Arg  
 5585 5590 5595 5600  
 Ile Val Tyr Thr Ala Cys Ser His Ala Ala Val Asp Ala Leu Cys Glu  
 5605 5610 5615  
 Lys Ala Leu Lys Tyr Leu Pro Ile Asp Lys Cys Ser Arg Ile Ile Pro  
 5620 5625 5630  
 Ala Arg Ala Arg Val Glu Cys Phe Asp Lys Phe Lys Val Asn Ser Thr  
 5635 5640 5645  
 Leu Glu Gln Tyr Val Phe Cys Thr Val Asn Ala Leu Pro Glu Thr Thr  
 5650 5655 5660  
 Ala Asp Ile Val Val Phe Asp Glu Ile Ser Met Ala Thr Asn Tyr Asp  
 5665 5670 5675 5680  
 Leu Ser Val Val Asn Ala Arg Leu Arg Ala Lys His Tyr Val Tyr Ile  
 5685 5690 5695  
 Gly Asp Pro Ala Gln Leu Pro Ala Pro Arg Thr Leu Leu Thr Lys Gly  
 5700 5705 5710  
 Thr Leu Glu Pro Glu Tyr Phe Asn Ser Val Cys Arg Leu Met Lys Thr  
 5715 5720 5725  
 Ile Gly Pro Asp Met Phe Leu Gly Thr Cys Arg Arg Cys Pro Ala Glu  
 5730 5735 5740  
 Ile Val Asp Thr Val Ser Ala Leu Val Tyr Asp Asn Lys Leu Lys Ala  
 5745 5750 5755 5760  
 His Lys Asp Lys Ser Ala Gln Cys Phe Lys Met Phe Tyr Lys Gly Val  
 5765 5770 5775  
 Ile Thr His Asp Val Ser Ser Ala Ile Asn Arg Pro Gln Ile Gly Val  
 5780 5785 5790  
 Val Arg Glu Phe Leu Thr Arg Asn Pro Ala Trp Arg Lys Ala Val Phe  
 5795 5800 5805

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Ile Ser Pro Tyr Asn Ser Gln Asn Ala Val Ala Ser Lys Ile Leu Gly  
5810 5815 5820

Leu Pro Thr Gln Thr Val Asp Ser Ser Gln Gly Ser Glu Tyr Asp Tyr  
5825 5830 5835 5840

Val Ile Phe Thr Gln Thr Thr Glu Thr Ala His Ser Cys Asn Val Asn  
5845 5850 5855

Arg Phe Asn Val Ala Ile Thr Arg Ala Lys Ile Gly Ile Leu Cys Ile  
5860 5865 5870

Met Ser Asp Arg Asp Leu Tyr Asp Lys Leu Gln Phe Thr Ser Leu Glu  
5875 5880 5885

Ile Pro Arg Arg Asn Val Ala Thr Leu Gln Ala Glu Asn Val Thr Gly  
5890 5895 5900

Leu Phe Lys Asp Cys Ser Lys Ile Ile Thr Gly Leu His Pro Thr Gln  
5905 5910 5915 5920

Ala Pro Thr His Leu Ser Val Asp Ile Lys Phe Lys Thr Glu Gly Leu  
5925 5930 5935

Cys Val Asp Ile Pro Gly Ile Pro Lys Asp Met Thr Tyr Arg Arg Leu  
5940 5945 5950

Ile Ser Met Met Gly Phe Lys Met Asn Tyr Gln Val Asn Gly Tyr Pro  
5955 5960 5965

Asn Met Phe Ile Thr Arg Glu Glu Ala Ile Arg His Val Arg Ala Trp  
5970 5975 5980

Ile Gly Phe Asp Val Glu Gly Cys His Ala Thr Arg Asp Ala Val Gly  
5985 5990 5995 6000

Thr Asn Leu Pro Leu Gln Leu Gly Phe Ser Thr Gly Val Asn Leu Val  
6005 6010 6015

Ala Val Pro Thr Gly Tyr Val Asp Thr Glu Asn Asn Thr Glu Phe Thr  
6020 6025 6030

Arg Val Asn Ala Lys Pro Pro Pro Gly Asp Gln Phe Lys His Leu Ile  
6035 6040 6045

Pro Leu Met Tyr Lys Gly Leu Pro Trp Asn Val Val Arg Ile Lys Ile  
6050 6055 6060

Val Gln Met Leu Ser Asp Thr Leu Lys Gly Leu Ser Asp Arg Val Val  
6065 6070 6075 6080

Phe Val Leu Trp Ala His Gly Phe Glu Leu Thr Ser Met Lys Tyr Phe  
6085 6090 6095

Val Lys Ile Gly Pro Glu Arg Thr Cys Cys Leu Cys Asp Lys Arg Ala  
6100 6105 6110

Thr Cys Phe Ser Thr Ser Ser Asp Thr Tyr Ala Cys Trp Asn His Ser  
6115 6120 6125

Val Gly Phe Asp Tyr Val Tyr Asn Pro Phe Met Ile Asp Val Gln Gln  
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Trp Gly Phe Thr Gly Asn Leu Gln Ser Asn His Asp Gln His Cys Gln  
 6145 6150 6155 6160  
 Val His Gly Asn Ala His Val Ala Ser Cys Asp Ala Ile Met Thr Arg  
 6165 6170 6175  
 Cys Leu Ala Val His Glu Cys Phe Val Lys Arg Val Asp Trp Ser Val  
 6180 6185 6190  
 Glu Tyr Pro Ile Ile Gly Asp Glu Leu Arg Val Asn Ser Ala Cys Arg  
 6195 6200 6205  
 Lys Val Gln His Met Val Val Lys Ser Ala Leu Leu Ala Asp Lys Phe  
 6210 6215 6220  
 Pro Val Leu His Asp Ile Gly Asn Pro Lys Ala Ile Lys Cys Val Pro  
 6225 6230 6235 6240  
 Gln Ala Glu Val Glu Trp Lys Phe Tyr Asp Ala Gln Pro Cys Ser Asp  
 6245 6250 6255  
 Lys Ala Tyr Lys Ile Glu Glu Leu Phe Tyr Ser Tyr Ala Thr His His  
 6260 6265 6270  
 Asp Lys Phe Thr Asp Gly Val Cys Leu Phe Trp Asn Cys Asn Val Asp  
 6275 6280 6285  
 Arg Tyr Pro Ala Asn Ala Ile Val Cys Arg Phe Asp Thr Arg Val Leu  
 6290 6295 6300  
 Ser Asn Leu Asn Leu Pro Gly Cys Asp Gly Gly Ser Leu Tyr Val Asn  
 6305 6310 6315 6320  
 Lys His Ala Phe His Thr Pro Ala Phe Asp Lys Ser Ala Phe Thr Asn  
 6325 6330 6335  
 Leu Lys Gln Leu Pro Phe Phe Tyr Tyr Ser Asp Ser Pro Cys Glu Ser  
 6340 6345 6350  
 His Gly Lys Gln Val Val Ser Asp Ile Asp Tyr Val Pro Leu Lys Ser  
 6355 6360 6365  
 Ala Thr Cys Ile Thr Arg Cys Asn Leu Gly Gly Ala Val Cys Arg His  
 6370 6375 6380  
 His Ala Asn Glu Tyr Arg Gln Tyr Leu Asp Ala Tyr Asn Met Met Ile  
 6385 6390 6395 6400  
 Ser Ala Gly Phe Ser Leu Trp Ile Tyr Lys Gln Phe Asp Thr Tyr Asn  
 6405 6410 6415  
 Leu Trp Asn Thr Phe Thr Arg Leu Gln Ser Leu Glu Asn Val Ala Tyr  
 6420 6425 6430  
 Asn Val Val Asn Lys Gly His Phe Asp Gly His Ala Gly Glu Ala Pro  
 6435 6440 6445  
 Val Ser Ile Ile Asn Asn Ala Val Tyr Thr Lys Val Asp Gly Ile Asp  
 6450 6455 6460  
 Val Glu Ile Phe Glu Asn Lys Thr Thr Leu Pro Val Asn Val Ala Phe  
 6465 6470 6475 6480

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Glu Leu Trp Ala Lys Arg Asn Ile Lys Pro Val Pro Glu Ile Lys Ile  
6485 6490 6495

Leu Asn Asn Leu Gly Val Asp Ile Ala Ala Asn Thr Val Ile Trp Asp  
6500 6505 6510

Tyr Lys Arg Glu Ala Pro Ala His Val Ser Thr Ile Gly Val Cys Thr  
6515 6520 6525

Met Thr Asp Ile Ala Lys Lys Pro Thr Glu Ser Ala Cys Ser Ser Leu  
6530 6535 6540

Thr Val Leu Phe Asp Gly Arg Val Glu Gly Gln Val Asp Leu Phe Arg  
6545 6550 6555 6560

Asn Ala Arg Asn Gly Val Leu Ile Thr Glu Gly Ser Val Lys Gly Leu  
6565 6570 6575

Thr Pro Ser Lys Gly Pro Ala Gln Ala Ser Val Asn Gly Val Thr Leu  
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Ile Gly Glu Ser Val Lys Thr Gln Phe Asn Tyr Phe Lys Lys Val Asp  
6595 6600 6605

Gly Ile Ile Gln Gln Leu Pro Glu Thr Tyr Phe Thr Gln Ser Arg Asp  
6610 6615 6620

Leu Glu Asp Phe Lys Pro Arg Ser Gln Met Glu Thr Asp Phe Leu Glu  
6625 6630 6635 6640

Leu Ala Met Asp Glu Phe Ile Gln Arg Tyr Lys Leu Glu Gly Tyr Ala  
6645 6650 6655

Phe Glu His Ile Val Tyr Gly Asp Phe Ser His Gly Gln Leu Gly Gly  
6660 6665 6670

Leu His Leu Met Ile Gly Leu Ala Lys Arg Ser Gln Asp Ser Pro Leu  
6675 6680 6685

Lys Leu Glu Asp Phe Ile Pro Met Asp Ser Thr Val Lys Asn Tyr Phe  
6690 6695 6700

Ile Thr Asp Ala Gln Thr Gly Ser Ser Lys Cys Val Cys Ser Val Ile  
6705 6710 6715 6720

Asp Leu Leu Leu Asp Asp Phe Val Glu Ile Ile Lys Ser Gln Asp Leu  
6725 6730 6735

Ser Val Ile Ser Lys Val Val Lys Val Thr Ile Asp Tyr Ala Glu Ile  
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Ser Phe Met Leu Trp Cys Lys Asp Gly His Val Glu Thr Phe Tyr Pro  
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Lys Leu Gln Ala Ser Arg Ala Trp Gln Pro Gly Val Ala Met Pro Asn  
6770 6775 6780

Leu Tyr Lys Met Gln Arg Met Leu Leu Glu Lys Cys Asp Leu Gln Asn  
6785 6790 6795 6800

Tyr Gly Glu Asn Ala Val Ile Pro Lys Gly Ile Met Met Asn Val Ala  
6805 6810 6815

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Lys Tyr Thr Gln Leu Cys Gln Tyr Leu Asn Thr Leu Thr Leu Ala Val  
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 Pro Tyr Asn Met Arg Val Ile His Phe Gly Ala Gly Ser Asp Lys Gly  
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 Val Ala Pro Gly Thr Ala Val Leu Arg Gln Trp Leu Pro Thr Gly Thr  
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 Leu Leu Val Asp Ser Asp Leu Asn Asp Phe Val Ser Asp Ala Tyr Ser  
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 Thr Leu Ile Gly Asp Cys Ala Thr Val His Thr Ala Asn Lys Trp Asp  
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 Leu Ile Ile Ser Asp Met Tyr Asp Pro Arg Thr Lys His Val Thr Lys  
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 Glu Asn Asp Ser Lys Glu Gly Phe Phe Thr Tyr Leu Cys Gly Phe Ile  
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 Lys Gln Lys Leu Ala Leu Gly Gly Ser Ile Ala Val Lys Ile Thr Glu  
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 His Ser Trp Asn Ala Asp Leu Tyr Lys Leu Met Gly His Phe Ser Trp  
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 Trp Thr Ala Phe Val Thr Asn Val Asn Ala Ser Ser Ser Glu Ala Phe  
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 Leu Ile Gly Ala Asn Tyr Leu Gly Lys Pro Lys Glu Gln Ile Asp Gly  
 6980 6985 6990  
 Tyr Thr Met His Ala Asn Tyr Ile Phe Trp Arg Asn Thr Asn Pro Ile  
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 Gln Leu Ser Ser Tyr Ser Leu Phe Asp Met Ser Lys Phe Pro Leu Lys  
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